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**US Army Corps  
of Engineers**

Cold Regions Research &  
Engineering Laboratory

# *Bibliography on* **COLD REGIONS SCIENCE AND TECHNOLOGY**

**VOLUME 40, PART 1, 1986**

Geza T. Thuronyi, Editor

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**BIBLIOGRAPHY ON COLD REGIONS SCIENCE AND TECHNOLOGY**  
**Volume 40, 1986**

**INTRODUCTION**

1-  
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The present volume contains material accessioned between October 1985 and September 1986. It contains full citations of 4788 items, in many cases with abstracts. Indexing for the volume is issued as Volume 40, Part 2 (AD-413312).

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Geza T. Thurnyi, Head  
Cold Regions Bibliography Project  
Science and Technology Division  
Library of Congress

- 40-1**  
Protection of construction workers in the North. (Otkhrana truda v stroitel'stve na Severe), Karasev, M.N., Leningrad, Stroizdat, 1985, 206p., In Russian with abridged English table of contents enclosed. 46 refs.  
Labor factors, Construction equipment, Protection, Warning systems, Safety, Clothing, Accidents, Transportation, Fires, Polar regions, Residential buildings, Site surveys.
- 40-2**  
Monitoring of snow cover pollution. (Monitoring zagrязneniia snezhnogo pokrova), Vasilenko, V.N., et al, Leningrad, Gidrometeoizdat, 1985, 181p., In Russian with abridged English table of contents enclosed. 166 refs.  
Nazarov, I.M., Fridman, Sh.D.  
Pollution, Environmental protection, Ecology, Monitoring, Snow cover distribution, Aerosols, Snow physics, Wastes, Air pollution, Water pollution, Soil pollution, Meteorological data, Charts, Fallout.
- 40-3**  
Individualistic growth response of tundra plant species to environmental manipulations in the field. Chapin, F.S., III, et al, *Ecology*, Apr. 1985, 66(2), p.564-576, 54 refs.  
Shaver, G.R.  
Tundra, Plants (botany), Growth, Environment simulation.
- 40-4**  
Plant-soil processes in *Eriophorum vaginatum* tussock tundra in Alaska: a systems modeling approach. Miller, I.C., et al, *Ecological monographs*, Dec. 1984, 54(4), p.361-405, Refs. p.393-396.  
Tundra, Plants (botany), Growth, Soil temperature, Soil chemistry, Soil water, Computerized simulation.
- 40-5**  
Interactions within the ocean-ice-atmosphere systems of the North Pacific and North Atlantic. Walsh, J.E., et al, Arlington, Virginia, Arctic Institute of North America, 1981, 38p. + 17 figs., AD-A099 681, 32 refs.  
Sater, J.E.  
Sea ice distribution, Periodic variations, Water temperature, Atmospheric pressure, Ice water interface, Ice air interface, Air water interactions.
- 40-6**  
Creep of frozen sands: qualitative and quantitative models. Ting, J.M., *Massachusetts Institute of Technology. Department of Civil Engineering. Research report*, Mar. 1981, R81-5, 432p., AD-A097 668, Ph D. thesis. Refs. p.419-431.  
Frozen ground mechanics, Sands, Soil creep, Ground ice, Ice mechanics, Soil mechanics, Mathematical models.
- 40-7**  
Relations between annual runoff and climate, Johan Dahl Land, South Greenland. Braithwaite, R.J., *Denmark. Grönlands geologiske undersøgelse. Gletscher-hydrologiske meddelelser*, May 1985, No.85/2, 25p., With Danish summary. 14 refs.  
Runoff, Glacier surveys, Climatic factors, Glacier ablation, Precipitation (meteorology), Temperature effects, Electric power, Greenland—Johan Dahl Land.
- 40-8**  
Glaciological investigations at Qamanarssup sermia, West Greenland, 1983-1984. Braithwaite, R.J., *Denmark. Grönlands geologiske undersøgelse. Gletscher-hydrologiske meddelelser*, May 1985, No.85/3, 26p., With Danish summary. Refs. p.24-26.  
Glaciology, Glacier surveys, Glacial hydrology, Glacier ablation, Climatology, Air temperature, Statistical analysis, Electric power, Greenland.
- 40-9**  
Ice cover of Greenland. Weidick, A., *Denmark. Grönlands geologiske undersøgelse. Gletscher-hydrologiske meddelelser*, May 1985, No.85/4, 18p. + maps, With Danish summary 7 refs.  
Land ice, Ice cover thickness, Glaciers, Ice sheets, Distribution, Greenland.
- 40-10**  
Davis Strait: marine geology, sedimentology, and iceberg scouring analysis. Pereira, C.P.G., et al, *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. CORE publication*, June 1985, No.85-3, 46p., 19 refs.  
Gillespie, R.T.  
Ice scoring, Icebergs, Marine geology, Bottom sediment, Sedimentation, Marine deposits, Ocean bottom, Drill core analysis, Ocean currents, Paleoclimatology, Davis Strait.
- 40-11**  
Proceedings. FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, 3 vols., Refs. passim. For selected papers see 40-12 through 40-30.  
Concrete structures, Prestressed concretes, Precast concretes, Ice conditions, Ice loads, Offshore structures, Railroads, Foundations, Concrete durability, Meetings.
- 40-12**  
Containing structures in areas of extreme climatic conditions. Pliskin, L., FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.1, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.179-188.  
Storage tanks, Prestressed concretes, Concrete durability, Concrete structures, Reinforced concretes, Climatic factors, Temperature effects.
- 40-13**  
Precast prestressed underground fuel tanks—defense fuel support point, Adak, Alaska. Freas, G.C., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.1, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.204-210, 2 refs.  
Shoemaker, M.  
Precast concretes, Prestressed concretes, Underground storage, Storage tanks, Leakage, Geology, Oil storage, Countermeasures, United States—Alaska—Adak.
- 40-14**  
Tarsut concrete caissons. Fitzpatrick, J., FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.7-14, 3 refs.  
Concrete structures, Caissons, Ice loads, Artificial islands, Ice conditions, Design criteria, Beaufort Sea.
- 40-15**  
Offshore structures and dredging. In't Veld, J., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.15-22.  
Brakel, J.  
Offshore structures, Artificial islands, Ice conditions, Concrete structures, Ocean waves, Trenching, Construction, Hydraulic structures.
- 40-16**  
Concrete module for the Global Marine Concrete Island Drilling System. Yee, A.F., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.23-30.  
Masuda, F.R., Kim, C.N., Doi, D.A., Daly, L.A.  
Offshore drilling, Offshore structures, Concrete structures, Ice loads, Prestressed concretes, Design criteria, Concrete durability, Countermeasures, Beaufort Sea.
- 40-17**  
Promise and practice of concrete construction in ice infested waters. Boyd, A.D., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.3, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.31-40, 9 refs.  
Bruce, J.C.  
Offshore structures, Concrete structures, Ice conditions, Ice loads, Thermal conductivity, Reinforced concretes, Offshore drilling, Stresses, Heat loss, Beaufort Sea.
- 40-18**  
Ice load considerations for concrete structures. Watt, B.J., FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.43-53, 18 refs.  
Concrete structures, Ice loads, Offshore structures, Fatigue (materials), Ice pressure, Ice conditions, Design, Ice strength.
- 40-19**  
Methodology of evaluation of iceberg loads on fixed offshore structures. Delcuil, G., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.54-58, 7 refs.  
Zaleski-Zamenhof, L.C.  
Ice loads, Offshore structures, Icebergs, Impact strength, Design, Statistical analysis.
- 40-20**  
Foundation engineering for Arctic concrete sea structures. Bea, R.G., FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.59-73, 34 refs.  
Offshore structures, Foundations, Concrete structures, Ice conditions, Artificial islands, Engineering, Environments, Foundations.
- 40-21**  
Durability of concrete in the Arctic environment. Fotinos, G.C., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.74-81, 6 refs.  
Hsu, Y.-Y.  
Lightweight concretes, Concrete durability, Offshore structures, Concrete structures, Freeze thaw cycles, Air entrainment, Damage, Beaufort Sea.
- 40-22**  
Aggregate-matrix interaction in concrete subjected to severe exposure. Bremner, T.W., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.82-88, 9 refs.  
Holm, T.A., De Souza, H.  
Lightweight concretes, Concrete durability, Concrete aggregates, Loads (forces), Chemical ice prevention.
- 40-23**  
Safety evaluation of concrete structures for Arctic offshore applications. Nasser, T., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.89-100, 10 refs.  
Fjeld, S.  
Concrete structures, Offshore structures, Ice conditions, Ice loads, Safety, Impact strength, Design criteria.
- 40-24**  
Transportation and emplacement of Arctic structures. Denton, A.A., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.2, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.101-109, 10 refs.  
Sharples, B.P.M., Huntington, J.  
Marine transportation, Offshore structures, Ice navigation, Ice conditions, Offshore drilling, Barges, Platforms, Beaufort Sea.
- 40-25**  
Use of cores for piping, ventilation and energy conservation. Skjelle, A., FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.3, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.49-57, 2 refs.  
Buildings, Precast concretes, Cold weather construction, Heat balance, Heat loss, Heat capacity.
- 40-26**  
Prestressed concrete parking garage construction in Canada. Watt, B.J., et al, FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.3, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.163-171.  
Prestressed concretes, Precast concretes, Airports, Concrete durability, Urban planning, Temperature effects, Temperature variations, Climatic factors, Canada.

- 40-27**  
**Prestressed advantage for durable parking structures.** Monroe, D.C., FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.3, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.172-178.
- Prestressed concretes, Concrete durability, Freeze thaw cycles, Urban planning, Chemical ice prevention, Salting, Damage, Countermeasures, Parking facilities.**
- 40-28**  
**Concrete track ties in Canada.** White, J.G., FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.3, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.222-226.
- Concrete durability, Railroads, Climatic factors, Canada.**
- 40-29**  
**Design, control and monitoring of driven precast concrete piles with regard to conditions during installation.** Bernander, S., FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984. Proceedings, Vol.3, Ottawa, Ontario, Canadian Prestressed Concrete Institute, 1984, p.250-257.
- Precast concretes, Pile driving, Moraines, Glacial deposits, Design.**
- 40-30**  
**Preliminary design of a prestressed lightweight concrete gravity barge structure for production drilling in shallow arctic waters.** Mast, R.F., et al, Unpublished manuscript, 6p. + 14 figs., Prepared for FIP/CPCI Symposia, Calgary, Canada, Aug. 25-31, 1984.
- Chichanski, W.J.**
- Prestressed concretes, Lightweight concretes, Ice conditions, Offshore structures, Ice loads, Offshore drilling, Ocean waves, Bering Sea.**
- 40-31**  
**Main scientific results of joint Soviet-American research in the southern ocean under POLEX South-77 Program.** Savchenko, V.G., et al, Investigations of the POLEX South-77 Program. Edited by A.F. Treshnikov and V.G. Savchenko, New Delhi, Oxonian Press, 1984, p.1-13, 29 refs. For Russian original see 34-3090, or 11J-23253.
- Men'shov, I.U.A.**  
**DLC QC875.2.P6518713**
- Ocean currents, Research projects, Meteorology.**
- The tasks of the joint Soviet-American hydrometeorological and hydrochemical research in the Australian sector of the southern ocean are defined. The most important scientific results of this research are reported. The research was carried out on the research ship *Professor Zubov* in the South Polar summer of 1977. The hydrologic and hydrochemical observations were carried out mainly around 132°E between 47° and 65°S. The aerometeorological studies were carried out in the region between 115° and 145°E, bounded by the ice edge in the north and 40°S in north. (Auth.)
- 40-32**  
**Precision of determination of location by the navigation satellite system Transit.** Abramov, B.I., et al, Investigations of the POLEX South-77 Program. Edited by A.F. Treshnikov and V.G. Savchenko, New Delhi, Oxonian Press, 1984, p.146-153, 6 refs. For Russian original see 34-3091, or 11G-23266.
- Ionov, I.U.A.**  
**DLC QC875.2.P6518713**
- Spacecraft, Oceanographic ships, Navigation.**
- This paper describes a technique for evaluation of the precision of determination of a ship's location by the navigation satellite system "Transit" during hydrophysical and other research operations in the world ocean. This technique is based on the analysis of a large quantity of factual data. (Auth.)
- 40-33**  
**Role of phase equilibrium in frost heave of fine-grained soil under negligible overburden pressure.** Nakano, Y., et al, *Advances in water resources*, June 1985, 8(2), MP 1896, p.50-68, 17 refs.
- Horiguchi, K.**
- Frost heave, Unfrozen water content, Soil water, Supercooling, Pressure, Phase transformations, Soil freezing, Analysis (mathematics).**
- The role of the phase equilibrium of water in frost heave was studied for two kinds of soil. The rate of frost heave and the rate of water intake were measured simultaneously under various rates of heat removal. The experimental data revealed a trend common for both soils that the rate of water intake attains its maximum at a certain critical rate of heat removal. The data were analyzed by using equations accurately describing the relation between these rates. The results of the analysis indicate a serious doubt about the validity of phase equilibrium in the system. Alternatively, an assumption was introduced that supercooling occurred between a front front and an unfrozen part of the soil. It was shown that supercooling could explain the data well under certain conditions.
- 40-34**  
**Vane shear strength of snow immersed in water: 1. Relation between shear strength and immersion time.** Kobayashi, T., *Seppyo*, June 1985, 47(2), p.55-62, 13 refs., In Japanese with English summary.
- Wet snow, Shear strength, Snow density, Time factor, Grain size.**
- 40-35**  
**Feasibility study of a system of urban snow removal and storage, integrated with air conditioning: Parts 1 and 2.** Umemura, T., et al, *Seppyo*, June 1985, 47(2), p.63-78, 13 refs., In Japanese with English summary.
- Snow removal, Storage, Air conditioning, Streets, Equipment, Cost analysis, Design.**
- 40-36**  
**Runoff from a snowshed during melting period.** Endo, J., et al, *Seppyo*, June 1985, 47(2), p.79-81, In Japanese. 3 refs., In Japanese with English summary.
- Shimotori, S., Matsuzaki, T.**
- Runoff, Snow melting, Seasonal variations.**
- 40-37**  
**Theory of melting and crystallization.** Yukalov, V.I., *Physical review B Condensed matter*, July 1, 1985, 32(1), p.436-446, 50 refs.
- Melting, Crystal growth, Phase transformations, Temperature effects, Supercooling, Analysis (mathematics).**
- 40-38**  
**Effect of nonuniform size on internal stresses in a rapid, simple shear flow of granular materials. Part 1. Two grain sizes.** Shen, H.H., *U.S. Army Cold Regions Research and Engineering Laboratory*, Feb. 1985, CR 85-02, 18p., ADA-154 045, 18 refs.
- Shear flow, Particle size distribution, Microstructure, Materials, Stresses, Strains, Avalanche mechanics, Mathematical models.**
- Existing theories that predict the stress-strain rate relationship in a rapidly sheared granular flow can only treat materials that are made of single-size particles. However, granular flows usually involve materials of mixed sizes. It has been observed in many laboratory studies that size distribution has a significant effect on the flow of a granular material. Despite its importance, no quantitative theory has been devised that can explain the effect of size distribution. An analytical model is developed here to quantify the stresses in a mixture of spheres with two different sizes and identical material properties. Binary collisions between adjacent particles are considered as the dominating stress-generating mechanism. Comparisons between the theoretical results and the existing laboratory data show good agreement.
- 40-39**  
**Computer programs for avalanche runout prediction.** Lang, T.E., *Japan. National Research Center for Disaster Prevention. Research notes*, Mar. 1984, No.59, p.1-79, 14 refs. Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.
- Avalanche tracks, Computer programs, Avalanche formation, Avalanche forecasting, Velocity, Avalanche mechanics.**
- 40-40**  
**Local orthotropic, planar elasticity computer program.** Lang, T.E., et al, *Japan. National Research Center for Disaster Prevention. Research notes*, Mar. 1984, No.59, p.81-137, With Japanese summary. Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.
- Numano, N., Abe, O.**
- Porous materials, Computer programs, Fluid flow, Heat transfer, Viscoelasticity, Loads (forces), Boundary layer.**
- 40-41**  
**Finite element computer analysis of snow settlement.** Lang, T.E., et al, *Japan. National Research Center for Disaster Prevention. Research notes*, Mar. 1984, No.59, p.139-187, 5 refs. Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.
- Nakamura, T.**
- Snow depth, Computer programs, Settlement (structural), Viscoelasticity, Snow temperature, Analysis (mathematics), Snow density, Snow water content, Diurnal variations.**
- 40-42**  
**Daily change of snowpack at near melting point.** Nakamura, T., et al, *Japan. National Research Center for Disaster Prevention. Research notes*, Mar. 1984, No.60, 47p., In Japanese with English summary. 6 refs. Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.
- Kenmotsu, K.**
- Snow depth, Melting points, Snow physics, Snow density, Snow cover, Snow water content, Diurnal variations.**
- 40-43**  
**International science programs in Antarctica.** Bentley, C.R., Antarctic politics and marine resources: critical choices for the 1980s. Edited by L.M. Alexander and L. Carter Hanson, Kingston, University of Rhode Island, 1985, p.45-54, 1 ref.
- Ice, Glaciology.**
- The history, functions, and structure of the Scientific Committee for Antarctic Research (SCAR) are reviewed, and it is pointed out that there is no formal direct link between SCAR and the consultative parties to the Antarctic Treaty. The BIOMASS Program is reviewed in relation to antarctic marine ecosystem research. Some considerations in arctic and antarctic biomedical research are presented, as are those pertinent to research on antarctic climate variability, the sea ice and the ice sheet conditions, atmospheric and terrestrial physics, glaciology, and the environmental effects of exploration and exploitation of mineral resources in Antarctica.
- 40-44**  
**National Oceanic and Atmospheric Administration's antarctic activities.** Laughlin, T.L., Antarctic politics and marine resources: critical choices for the 1980s. Edited by L.M. Alexander and L. Carter Hanson, Kingston, University of Rhode Island, 1985, p.65-68.
- Ice surveys, Snow surveys, Research projects.**
- The scientific research activities carried out by NOAA in the area covered by the Antarctic Treaty and in adjacent areas of the southern ocean are divided into three categories: research related to resource management, done in cooperation with the internationally funded Biological Investigations of the Marine Antarctic Systems and Stocks program; basic research of longer-term applicability, which includes a baseline operation station at the South Pole measuring atmospheric trace elements and the observation of the antarctic ice sheet; and service, such as provided by the Navy/NOAA Joint Ice Center, the NOAA's National Environmental Satellite Data and Information Service, and the NOAA's World Data Center-A for Glaciology.
- 40-45**  
**On the formation and measurement of rime in Finland.** Ahti, K., *Helsinki. University. Värriö Subarctic Research Station. Report*, 1976, No.61, 8p., 2 refs.
- Hoarfrost, Ice formation, Ice fog, Freezing, Supercooled clouds, Cloud droplets, Surface temperature, Wind direction, Air temperature, Meteorological factors, Measuring instruments.**
- 40-46**  
**Soil water and temperature in harvested and nonharvested pinyon-juniper stands.** Everett, R.L., et al, *U.S. Forest Service. Intermountain Research Station, Ogden, UT. Research paper*, Apr. 1985, INT-342, 5p., 17 refs.
- Sharrow, S.H.**
- Forest soils, Soil water, Soil temperature, Forest canopy, Precipitation (meteorology), Evapotranspiration, Mountains.**
- 40-47**  
**Cold-weather concreting. Design and control of concrete mixtures, Chapt.12, Skokie, IL, Portland Cement Association, 1980, 14p., 10 refs. 12th edition.**
- Winter concreting, Cold weather construction, Concrete freezing, Concrete strength, Thermal insulation, Heat loss, Temperature effects.**
- 40-48**  
**Dielectric properties of brine in sea ice at microwave frequencies.** Stogryn, A., et al, *IEEE transactions on antennas and propagation*, May 1985, AP-33(5), p.523-532, 18 refs.
- Desargant, G.J.**
- Ice electrical properties, Brines, Microwaves, Dielectric properties, Sea ice, Electromagnetic properties, Ions, Temperature effects.**
- 40-49**  
**Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984).** Japan. National Research Center for Disaster Prevention, 1985, var.p., In Japanese, some with English summary, or in English. Refs. passim.
- Snow removal, Snow melting, Snowfall, Winter maintenance, Road maintenance, Ground water, Artificial melting, Japan—Shinjo.**

**40-50**  
Snow, snow disasters and prevention techniques against them in Japan.

Nakamura, T., *Technology for disaster prevention*, 1980, Vol.4, p.253-312, 31 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Ice prevention, Snow loads, Ice cover, Roofs, Streets, Snowflakes, Metamorphism (snow), Avalanche formation, Countermeasures.

**40-51**  
History of snow and ice studies in Japan, and the present activities on snow and ice studies in the World.

Nakamura, T., *Japanese Society of Soil Mechanics and Foundation Engineering. Journal*, 1982, 30(7), p.93-102, In Japanese. 67 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow surveys, Ice surveys, Organizations, Glaciology.

**40-52**  
Domestic science.

Nakamura, T., et al., *Research on snow and ice*, 1982, No.6, p.111-119, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Higashiura, M.  
Snow surveys, Snow removal, Ice surveys, Ice removal, Snow physics, Ice physics.

**40-53**  
Snow disaster prevention.

Higashiura, M., *Technology for disaster prevention*, 1982, Vol.6, p.99-124, 11 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Snow melting, Snow accumulation, Damage, Countermeasures, Snow cover effect, Wind direction, Surface properties, Topographic features, Japan.

**40-54**  
Snow as natural and socio-economical resources.

Numano, N., *Journal of architecture and building science*, 1982, No.1201, p.44-47, In Japanese. 20 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Snowmelt, Meltwater, Water supply.

**40-55**  
World of snow—its internal properties.

Nakamura, T., *Tohoku sericultural research*, 1982, Vol.7, p.1-3, In Japanese. 6 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow physics, Snow crystal structure, Snow depth, Snow cover.

**40-56**  
Application of large-scale air photo data of snow-covered ground to regional development.

Higashiura, M., Report on feasibility study for development of snow disaster prevention techniques in snowy areas, Tokyo, 1983, p.200-209, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow cover distribution, Remote sensing, Airborne equipment, Photography, Engineering.

**40-57**  
Study on micro-topographic relations between wind direction and shape of deposit snow.

Higashiura, M., Report on feasibility study for development of snow disaster prevention techniques in snowy areas, Tokyo, 1983, p.382-383, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow cover distribution, Topographic features, Wind direction, Blowing snow, Snow accumulation.

**40-58**  
Special water-use for snow removal and snow melting and its feasibility in built-up areas of snowy cities in Japan.

Higashiura, M., *Beiträge zur Hydrologie*, 1983, No.3, IGU Commission on the IHP, 4th report, Kirchzarten, Germany, 1982, p.317-332, 10 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Snow melting, Winter maintenance, Road maintenance, Artificial melting, Snow depth, Water balance, Water temperature, Drains, Equipment.

**40-59**  
Ground water for snow removal and snow melting in snowy cities.

Higashiura, M., Report on feasibility study for development of snow disaster prevention techniques in snowy areas, Tokyo, 1983, p.297-302, In Japanese. 1 ref., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Ground water, Snow melting, Road maintenance, Streets, Winter maintenance, Artificial melting.

**40-60**  
Research study on ground water for snow removal and snow melting in built-up areas of snowy cities.

Higashiura, M., Report on feasibility study for development of snow disaster prevention techniques in snowy areas, Tokyo, 1983, p.422-425, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Snow melting, Ground water, Winter maintenance, Artificial melting, Municipal engineering.

**40-61**  
Experimental examination of utility of snow melting method using hot water left after bath.

Nakamura, H., *National Research Center for Disaster Prevention. Report*, 1980, No.23, p.231-243, In Japanese with English summary. 5 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Snow melting, Water temperature, Artificial melting, Utilities, Experimentation.

**40-62**  
Practical use of gutter system for snow removal and its problem.

Higashiura, M., Data for the Society for the Study of Snow Removal, Aomori, Japan, 1981, p.1-18, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Snow melting, Drains, Water temperature.

**40-63**  
Melting systems of snow on road by sprinkling of water; melting systems of snow on roof using geothermal energy.

Nakamura, H., *Handbook of geothermal development*, Tokyo, 1982, p.902-911, 915-918, In Japanese. 50 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Snow melting, Geothermal thawing, Water temperature, Road maintenance, Roofs, Winter maintenance, Snow accumulation.

**40-64**  
Feasibility of the usage of wind energy to snow removal.

Nakamura, T., Report on feasibility study for development of snow disaster prevention techniques in snowy areas, Tokyo, 1983, p.303-305, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow removal, Wind power generation, Wind velocity.

**40-65**  
Technique of snow melting on road by sprinkling of ground water.

Nakamura, H., Report on feasibility study for development of snow disaster prevention techniques in snowy areas, Tokyo, 1983, p.174-178, In Japanese. 7 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow melting, Ground water, Snow removal, Artificial melting, Road maintenance, Winter maintenance.

**40-66**  
Proposal to develop a more effective snow melting system on road by ground water.

Nakamura, H., Report on feasibility study for development of snow disaster prevention techniques in snowy areas, Tokyo, 1983, p.365-366, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snow melting, Ground water, Snow removal, Winter maintenance, Road maintenance.

**40-67**  
Fundamental research on the small receiving antenna used for broadcasting satellite in snowy districts.

Suzuki, M., et al., *Hoso-Bunka Foundation. Research report*, 1984, No.7, p.75-81, In Japanese. 2 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snowfall, Radio communication, Antennas, Spacecraft, Road maintenance, Winter maintenance.

**40-68**  
Snow problems on built-up areas of local cities.

Numano, N., et al., *Journal of architecture and building science*, 1981, No.1176, p.52-54, In Japanese. 14 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Higashiura, M., Umetsu, M.  
Snow removal, Urban planning, Snow accumulation, Countermeasures.

**40-69**  
Geographical studies on Fukui, Ohno, Yamagata and Shinjo cities which suffered from a heavy snowfall of 1980/1981.

Nakamura, T., et al., Research report of the heavy snow in the winter season of 1980 to 1981, Tokyo, 1983, p.53-118, In Japanese. 7 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Snowfall, Snow accumulation, Snow removal, Streets, Road maintenance, Winter maintenance.

**40-70**  
Urban renewal in snowy cities to obtain snow-resistibility.

Numano, N., Report on feasibility study for development of snow disaster prevention techniques in snowy areas, Tokyo, 1983, p.210-216, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Winter maintenance, Urban planning, Snow accumulation, Countermeasures.

**40-71**  
Study on urban renewal techniques for snow-resistibility of built-up areas of snowy cities.

Numano, N., Report on feasibility study for development of snow disaster prevention techniques in snowy areas, Tokyo, 1983, p.384-387, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.

Urban planning, Winter maintenance, Snow removal, Snow accumulation, Countermeasures.

- 40-72**  
Field investigation of a landslide that occurred at Takinosawa, Ohkura-mura, Mogami-gun, Yamagata-ken.  
Higashiura, M., et al, *National Research Center for Disaster Prevention. Report*, 1980, No.23, p.271-286, In Japanese with English summary. 7 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.2 (Papers and reports, 1979-1984), 1985.  
Abe, O.  
Landslides, Meltwater, Weathering, Snow depth, Snow density, Snow water equivalent, Mountains.
- 40-73**  
Contributions from the Shinjo Branch, No.3 (Research data, 1979-1984).  
Japan. National Research Center for Disaster Prevention, 1985, var.p., In Japanese some with English summaries. Refs. passim. For selected papers see 40-74 through 40-78.  
Snow removal, Snow surveys, Winter maintenance, Road maintenance, Ground water, Countermeasures, Damage, Japan—Shinjo.
- 40-74**  
Survey of urban snow damage in Fukui-ken and Ishikawa-ken caused by the heavy snow in a winter season of 1980 to 1981, named "56 gosetsu".  
Higashiura, M., et al, *Investigations of principal natural disasters*, 1982, No.17, p.171-335, In Japanese., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.3 (Research data, 1979-1984), 1985.  
Numano, N.  
Snow loads, Snow accumulation, Snow removal, Winter maintenance, Damage, Countermeasures.
- 40-75**  
Profile investigation of physical properties of snow cover on the ground surface at Shinjo City during 5 winter periods of 1975 to 1980.  
Higashiura, M., et al, *Review of research for disaster prevention*, 1982, No.70, p.1-103, In Japanese with English summary. 5 refs., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.3 (Research data, 1979-1984), 1985.  
Abe, O., Numano, N.  
Snow physics, Snow cover, Profiles, Snow depth, Snow density, Snow hardness, Snow temperature, Snow water content, Statistical analysis, Japan—Shinjo.
- 40-76**  
Observational data of groundwater in the Shinjo basin (2)—Shallow groundwater level and water temperature (1976-1980).  
Higashiura, M., *Review of research for disaster prevention*, 1982, No.71, p.1-90, In Japanese with English summary. 4 refs. For Pt.1 see 34-2557., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.3 (Research data, 1979-1984), 1985.  
Ground water, Snow cover effect, Water level, Snow-melt, Water temperature, Seasonal variations.
- 40-77**  
Snow damages and their countermeasures of municipalities in the snowy area of Japan (1)—Two winter seasons of 1978 to 1979, and 1979 to 1980.  
Numano, N., *Review of research for disaster prevention*, 1982, No.72, p.1-247, In Japanese with English summary., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.3 (Research data, 1979-1984), 1985.  
Snow removal, Snow cover effect, Winter maintenance, Damage, Countermeasures, Snow depth, Seasonal variations, Statistical analysis, Ice control, Municipal engineering.
- 40-78**  
Snow damages and their countermeasures of municipalities in the snowy area of Japan (2)—A winter season of 1980 to 1981.  
Numano, N., *Review of research for disaster prevention*, 1983, No.76, 126p., In Japanese with English summary., Also published in Japan. National Research Center for Disaster Prevention. Contributions from the Shinjo Branch, No.3 (Research data, 1979-1984), 1985.  
Snow removal, Snow accumulation, Damage, Countermeasures, Ice control, Snow depth, Cost analysis, Winter maintenance, Municipal engineering.
- 40-79**  
Theoretical and observed profiles of tidal currents at two sites on the southeastern Bering Sea shelf.  
Moffeld, H.O., et al, *U.S. National Oceanic and Atmospheric Administration. Technical memorandum*, Oct. 1984, ERL PMEL-62, 60p., Refs. p.58-60.  
Shumacher, J.D., Pashinski, D.J.  
Tidal currents, Shores, Ocean currents, Ocean waves, Boundary layer, Profiles, Coastal topographic features, Bottom topography, Bering Sea.
- 40-80**  
Properties of de-icing chemicals.  
Igura, K., *Shikensho hokoku—Nippon doro kodan shikensho*, Nov. 1981, p.212-219, In Japanese with English summary. 6 refs.  
Chemical ice prevention, Winter maintenance, Pavements, Concrete structures, Chemical analysis, Coagulation, Countermeasures.
- 40-81**  
Study on de-icing agents—study on the use of sodium chloride (NaCl) in cold area.  
Yamagami, S., et al, *Shikensho hokoku—Nippon doro kodan shikensho*, Nov. 1983, p.154-160, In Japanese with English summary. 6 refs.  
Sato, K., Kuruma, K.  
Chemical ice prevention, Skid resistance, Pavements, Concrete structures, Freezing points, Antifreezes, Chemical analysis.
- 40-82**  
Remote sensing application in agriculture and hydrology.  
Frayse, G., ed, Rotterdam, A.A. Balkema, 1980, 502p., Proceedings of a seminar held at the Joint Research Centre of the Commission of the European Communities, Ispra, Italy, Nov. 21-Dec. 2, 1977. For selected papers see 40-83 through 40-88.  
Hydrology, Snow surveys, Remote sensing, Agriculture, Meetings.
- 40-83**  
Snowcover monitoring from satellite data under European conditions.  
Haefner, H., Remote sensing application in agriculture and hydrology. Edited by G. Frayse, Rotterdam, A.A. Balkema, 1980, p.339-372, 28 refs.  
Snow cover distribution, Snow surveys, Remote sensing, Snow melting, Water reserves, Photointerpretation, Mapping, Computer applications, Europe.
- 40-84**  
Computer-aided analysis of satellite and aircraft MSS data for mapping snow-cover and water resources.  
Hoffer, R.M., Remote sensing application in agriculture and hydrology. Edited by G. Frayse, Rotterdam, A.A. Balkema, 1980, p.373-388, 22 refs.  
Snow cover distribution, Remote sensing, Computer applications, Reflectivity, Water reserves, Mapping, LANDSAT, Cloud cover, Monitors.
- 40-85**  
Electromagnetic studies of ice and snow. 1. Radiometry of ice and snow.  
Gudmandsen, P.E., Remote sensing application in agriculture and hydrology. Edited by G. Frayse, Rotterdam, A.A. Balkema, 1980, p.389-400, 9 refs.  
Ice surveys, Snow surveys, Remote sensing, Microwaves, Radiometry, Thermal radiation, Measuring instruments.
- 40-86**  
Electromagnetic studies of ice and snow. 2. Radio echo sounding.  
Gudmandsen, P.E., Remote sensing application in agriculture and hydrology. Edited by G. Frayse, Rotterdam, A.A. Balkema, 1980, p.401-416, 17 refs.  
Ice surveys, Snow surveys, Radio echo soundings, Electromagnetic properties, Ice cover thickness, Radio waves, Ice electrical properties, Snow electrical properties, Profiles, Snow depth, Analysis (mathematics).  
A technique of radio echo sounding is described with emphasis on the physical aspects of the system, and its application to ice and snow in Greenland and East Antarctica is reported. A recording made in Antarctica with the 60 MHz system and a pulse length of 250 nanoseconds shows interesting features. The mountains to the left covered by about 2,500 m of ice are represented by hyperbolas. In principle they represent only the summit of the mountain but often modifications by the mountain structure occur and a method of reconstruction of the relief has been worked out. The maximum ice thickness observed is about 4,300 m in the neighborhood of Dome C (76 S, 125 E). At that place the bottom echo shows a smooth pattern in contrast to the echoes from the ice-rock interface at both sides which partly show the usual hyperbolic shape. This feature extends over about 4 km and is attributed to reflection from a water surface—a subglacial lake.
- 40-87**  
Hydrologic basin models.  
Martinez, J., Remote sensing application in agriculture and hydrology. Edited by G. Frayse, Rotterdam, A.A. Balkema, 1980, p.447-459, 12 refs.  
Runoff forecasting, Hydrology, Meltwater, Remote sensing, Models, Ablation, Snow depth, Computer programs, Snow cover distribution, Seasonal variations.
- 40-88**  
Satellite data collection systems; hydrologic application.  
Taillade-Carriere, M., Remote sensing application in agriculture and hydrology. Edited by G. Frayse, Rotterdam, A.A. Balkema, 1980, p.461-470, 16 refs.  
Hydrology, Remote sensing, Water reserves, Snow accumulation, Computer programs, Snow water equivalent, Ice cover thickness.
- 40-89**  
Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports. [Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov].  
Kudriavtsev, V.A., ed, Moscow, Universitet, 1981, 221p., In Russian. For selected summaries see 40-90 through 40-95.  
Moscow, Universitet. Kafedra merzlotovedeniia.  
Permafrost physics, Permafrost structure, Permafrost hydrology, Frozen rock strength, Active layer, Freeze thaw cycles, Permafrost thermal properties, Permafrost beneath structures, Experimentation, Tests.
- 40-90**  
Methods of studying water erosion of frozen fines for the evaluation of potential erosion danger for territories in the cryolithozone. [Metodika izucheniia razmyvacnosti merzlykh dispersnykh porod dlia tselei otsenki potentsial'noi erozionnoi opasnosti territorii v kriolitozone].  
Ershov, E.D., et al, Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.3-4, In Russian.  
Kuchukov, E.Z., Malinovskii, D.V.  
Frozen fines, Water erosion, Environmental protection, Soil surveys, Analysis (mathematics).
- 40-91**  
X-ray diffraction technique of studying ice formation processes. [Metodika rentgenograficheskogo issledovaniia protsessov l'dobrazovaniia].  
Filatova, E.V., Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.5, In Russian.  
Ice formation, X ray diffraction, Porous materials, Water vapor, Ice sublimation, X ray analysis.
- 40-92**  
Experience in determining electrical properties of frozen rocks under natural conditions. [Opyt opredeleniia elektricheskikh kharakteristik merzlykh porod v estestvennom zaleganii].  
Fugach, V.B., et al, Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.5-6, In Russian.  
Timofeev, V.M., Biashkov, G.P.  
Permafrost physics, Electrical properties, Electromagnetic prospecting, Recording.

- 40-93**  
Using seismoacoustic methods in studying structure and properties of frozen rocks. (Voprosy primeneniia selmoakusticheskikh metodov dlia izucheniia stroeniia i svoystv merzlykh porod). Gorianov, N.N., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.6-7, In Russian.  
Skvortsov, A.G., Koz'yev, V.G.  
Permafrost structure, Ice acoustics, Permafrost thermal properties, Ground thawing, Acoustic measurement, Seismic surveys.
- 40-94**  
Sampling frozen ground of layered cryogenic structure. (Osobennosti opytovaniia merzlykh gruntov sloistoi kriogennoi tekstury). Minkin, M.A., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.7-8, In Russian.  
Permafrost samplers, Permafrost structure, Ground ice, Layers, Sampling.
- 40-95**  
Accuracy of determining physical properties of frozen coarse clastic ground. (O tochnosti opredeleniia fizicheskikh svoystv merzlykh krupnoblomochnykh gruntov). Davidenko, V.P., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.9-10, In Russian.  
Cryogenic soils, Soil aggregates, Cryogenic structure, Ground ice, Physical properties.
- 40-96**  
Controlling temperature regime of soil samples under laboratory conditions. (K metodike regulirovaniia temperaturnogo rezhima obraztsov gruntov v laboratornykh usloviakh). Sychev, I.U.I., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.11-12, In Russian.  
Portniagin, A.P.  
Permafrost thermal properties, Permafrost structure, Sampling, Frozen rock temperature, Tests, Laboratory techniques.
- 40-97**  
Ball-type die of new structure. (Novaia konstruktsiia sharikovogo pribora). Mirenburg, I.U.S., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.12-13, In Russian.  
Skorokin, V.A., Fedoseev, I.U.G., Fomin, V.A.  
Frozen ground, Measuring instruments, Cohesion.
- 40-98**  
Well logging techniques for studying lithological composition, ice volume in frozen rocks and determining the position of permafrost boundaries in the well. (Is-pol'zovanie karotazha dlia issledovaniia litologicheskogo sostava, l'distosti merzlykh porod i opredeleniia polozheniia granits mnogoletnei merzloty v skvazhinakh). Sedov, B.M., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.14-15, In Russian.  
Surkova, N.M., Shakhonin, V.A.  
Geophysical surveys, Well logging, Permafrost structure, Frozen fines, Ice volume, Phase transformations, Physical properties.
- 40-99**  
Equipment and techniques of studying electrical properties of freezing and thawing rocks under natural conditions. (Tekhnika i metodika issledovaniia dinamiki elektricheskikh svoystv promerzaiushchikh i ottaivaiushchikh gornykh porod v estestvennom zalegani). Zhandalinov, V.M., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.17-18, In Russian.  
Soil freezing, Frost penetration, Ground thawing, Physical properties, Electrical properties, Measuring instruments.
- 40-100**  
Controlling and evaluating the state of thawing and freezing rocks by cyclic measurements of electrical parameters. (Primenenie tsiklicheskikh izmerenii elektricheskikh parametrov dlia otsenki i kontrolya sostoiianiia protaivaiushchikh i promerzaiushchikh gornykh porod). Zhandalinov, V.M., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.18-19, In Russian.  
Mel'nikov, V.P.  
Frozen ground physics, Frozen ground strength, Frozen ground temperature, Phase transformations, Ice volume, Unfrozen water content, Measuring instruments, Electric equipment.
- 40-101**  
Quick methods of seismoacoustic studies of thawing and freezing processes in permafrost areas. (Ekspresnye metody selmoakusticheskikh issledovaniil protsessov ottaivaniia i promerzaniia v ralonakh mnogoletnei merzloty). Sedov, B.M., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.19-21, In Russian.  
Active layer, Freeze thaw cycles, Hydrothermal processes, Soil temperature, Seasonal variations, Permafrost depth.
- 40-102**  
Laboratory technique of determining gas permeability of frozen rocks. (K metodike laboratornogo opredeleniia gazopronitsaemosti merzlykh gornykh porod). Piastolov, A.D., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.21, In Russian.  
Liquefied gases, Artificial freezing, Underground storage, Reservoirs, Frozen rocks, Permeability, Permafrost thermal properties.
- 40-103**  
Determining the permeability of massive permafrost. (Opredelenie pronitsaemosti massivov vechnomerzlykh porod). Kalashnikov, P.I., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.22, In Russian.  
Sudarikov, I.U.F., Lapochkin, B.K.  
Underground storage, Reservoirs, Petroleum products, Permafrost.
- 40-104**  
Determining thermophysical properties of thawed and frozen ground under field conditions. (Metodika opredeleniia teplofizicheskikh svoystv talykh i merzlykh gruntov v polevykh usloviakh). Danielian, I.U.S., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.23-24, In Russian.  
Zaitsev, V.S., Kudriavtsev, E.A.  
Permafrost thermal properties, Active layer, Permafrost physics, Measuring instruments, Frozen rock temperature, Accuracy.
- 40-105**  
Nonstationary thermal studies of permafrost intervals. (Nestatsionarnoe teplovoe issledovanie intervala mnogoletnemerzlykh porod). Polozkov, A.V., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.24-25, In Russian.  
Drilling, Drilling fluids, Permafrost, Permafrost structure, Drill core analysis, Ice volume, Frozen rock temperature, Physical properties.

40-106

**Studying the formation of strength and deformational properties of frozen ground.** (Issledovanie prirody formirovaniia prochnostnykh i deformatsionnykh svoystv merzlykh gruntov). Cheverev, V.G., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.25-26, In Russian.

Kuleshov, I.U.V.

**Ice composition, Permafrost physics, Rheology, Permafrost structure, Frozen rock strength, Soil composition.**

40-107

**Calculating the frost-heave deformations of water saturated ground.** (Metodika otsenki deformatsii pucheniia vlagonasyshchennykh gruntov). Ershov, E.D., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.26-28, In Russian.

Lebedenko, I.U.P., Petrov, V.S.

**Frozen fines, Freeze thaw cycles, Soil water migration, Frost heave, Analysis (mathematics).**

40-108

**Similarity laws for testing strength of massive rocks and samples.** (Zakony podobiiia ispytaniia massiva i obraztsov gruntov na prochnost'). Iofik, V.Z., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.30-31, In Russian.

**Permafrost physics, Mathematical models, Rock mechanics, Frozen ground strength, Simulation.**

40-109

**Studying phase composition of moisture in fine grained ground.** (Izuchenie fazovogo sostava vlagi v dispersnykh gruntakh). Danielian, I.U.S., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.31-32, In Russian.

IAnitskil, P.A., Stepinkin, A.A., Galieva, V.N.

**Frozen fines, Unfrozen water content, Measuring instruments.**

40-110

**Field studies of the structure and properties of coarse-grained frozen, freezing and thawing rocks.** (Metodika polevogo izucheniia sostava stroeniia i svoystv krupnooblomochnykh merzlykh, promerzaiushchikh i ottaivaiushchikh porod). Shesternev, D.M., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.33-35, In Russian.

**Mine shafts, Quarries, Frozen ground, Organic soils, Cryogenic structures, Active layer, Permafrost structure, Ground ice, Ice structure, Impurities.**

40-111

**New method of paleoclimatic reconstruction for studying permafrost dynamics.** (Novyi metod paleoklimaticheskikh rekonstruktsii dlia issledovaniia dinamiki mngoletnemerzlykh porod). Sheshin, I.U.B., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.35-37, In Russian.

Sheshina, O.N.

**Permafrost dating, Permafrost distribution, Permafrost origin, Human factors, Paleogeology, Paleoclimatology, Environmental protection.**

40-112

**Experimental study of static growth of cracks in frozen ground.** (Eksperimental'nye issledovaniia staticheskogo rosta treshchin v merzlykh gruntakh). Grechishchev, S.E., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.38-39, In Russian.

Sheshin, I.U.B.

**Frozen ground strength, Frost shattering, Crack propagation, Sands, Loams, Peat.**

40-113

**Methods of assessing the spatial variability of permafrost structure, composition and properties for purposes of engineering geocryological surveys.** (O metodakh otsenki prostranstvennoi izmenchivosti stroeniia, sostava i svoystv MMP pri inzhenerno-geokriologicheskoi s'emke). Goral'chuk, M.I., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.39-41, In Russian.

Mel'nikov, E.S.

**Mapping, Geocryology, Landscape types, Permafrost distribution, Permafrost structure.**

40-114

**Problems and methods of studying rocks during geocryological-engineering-geological investigations.** (Zadachi i metody izucheniia gornykh porod pri merzlotno-inzhenerno-geologicheskikh izyskaniakh). Trush, N.I., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.41-43, In Russian.

**Site surveys, Engineering geology, Geocryology, Petroleum industry, Buildings, Pipelines, Permafrost beneath structures.**

40-115

**Experience in estimating the effect of landscape boundaries in detailed engineering-geocryological investigations.** (Opyt otsenki vliianiia landschaftnykh granits pri detal'nykh inzhenerno-geokriologicheskikh issledovaniakh). Cherkrygina, S.N., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.43-44, In Russian.

**Mapping, Engineering geology, Landscape types, Geocryology, Classifications.**

40-116

**Allowing for the representativeness of engineering-geocryological analysis in calculating generalized characteristics of different parameters.** (Uchet predstavitel'nosti inzhenerno-geokriologicheskogo oprobovaniia pri raschete obobshchennykh kharakteristik svoystv). Drozdov, D.S., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.44-46, In Russian.

Shirshukova, A.S.

**Tundra, Engineering geology, Pipelines, Permafrost beneath structures, Ground thawing, Physical properties, Permafrost physics.**

46-117

**Approximate calculation of the thickness of seasonal and perennial freeze-thaw halos around underground pipelines.** (Metodika priblizhennykh raschetov moshchnosti sezonnogo i mngoletnogo oreolov ottaivaniia (promerzaniia) gruntov vokrug zaglublennogo truboprovoda). Kondrat'ev, V.G., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.46-48, In Russian.

**Pipelines, Permafrost beneath structures, Ground thawing, Active layer, Seasonal freeze thaw.**

40-118

**Transformations in composition, structure and properties of fine grained soil during freeze-thaw cycles.** (Preobrazovanie sostava, stroeniia i svoystv dispersnykh porod pri tsiklicheskoi promerzani-i-ot-taivani-i). Ershov, E.D., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.52, In Russian.

Kuchukov, E.Z., Dats'ko, P.S.

**Frozen fines, Freeze thaw cycles, Frost penetration, Hydrothermal processes, Soil composition, Soil chemistry, Cryogenic structure.**

40-119

**Role of thermophysical, physico-chemical and mechanical processes in the transformation of composition and structure of rocks during freeze-thaw.** (Rol' teplofizicheskikh, fiziko-khimicheskikh i mekhanicheskikh protsessov v preobrazovanii sostava i stroeniia porod pri promerzani-ottauivani). Lebedenko, I.U.P., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.50-51, In Russian.

**Soil freezing, Frost penetration, Soil water migration, Hydrothermal processes, Frozen ground physics, Frozen ground chemistry.**

40-120

**Using geophysical methods in studying the composition and structure of frozen ground under laboratory and field conditions.** (Izuchenie sostava i stroeniia merzlykh gruntov v laboratornykh i polevykh usloviakh s pomoshch'iu geofizicheskikh metodov). Bogoliubov, A.N., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.53, In Russian.

**Permafrost physics, Acoustics, Electrical properties, Temperature effects, Lithology, Ice volume, Cryogenic structure.**

40-121

**Changes in physical and chemical processes during frost penetration into peat and sapropel.** (Izmeneniia fiziko-khimicheskikh protsessov pri promerzhanii torfov i sapropel). Popov, M.V., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.54-55, In Russian.

**Soil freezing, Organic soils, Peat, Frost penetration, Hydrothermal processes.**

40-122

**Unfrozen water in clay-sand mixtures subjected to freeze-thaw cycles.** (Nezamershshaia voda v glinisto-peschanykh smesiakh podverzhennykh tsiklicheskomu zamorazhivaniu-ottauivaniu). Efimov, S.S., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.56, In Russian.

**Frozen fines, Freeze thaw cycles, Clays, Sands, Unfrozen water content.**

40-123

**Estimating quantities of unfrozen water in capillary porous colloids.** (O prognozirovanii kolichestva nezamershshoi vody v kolloidnykh kapillarno-poristykh materialakh). Efimov, S.S., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.50, In Russian.

**Colloids, Capillarity, Unfrozen water content, Porosity.**

40-124

**Dynamics of concentration changes in pore solutions under cyclic freeze-thaw.** (Dinamika kontsentratsionnykh izmerenii porovogo rastvora pri tsiklicheskom vozdeistvii nizkikh temperatur). Popov, V.I., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.57-58, In Russian.

**Soil freezing, Porosity, Soil water migration, Ion density (concentration), Freeze thaw cycles, Ice formation, Water chemistry.**

40-125

**Studying migration of salts in frozen water-saturated sands.** (Izuchenie migratsii solей v merzlykh vlagonasyshchennykh peskakh). Nechaev, E.A., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.58-60, In Russian.

**Permafrost physics, Soil water migration, Water chemistry, Mechanical properties, Salinity.**

40-126

**Structural and morphological changes in pore spaces and minerals of cement-sand grouts used in oil-pipeline construction, under conditions of cyclic freeze-thaw.** (Strukturno-morfologicheskie izmeneniia porovogo prostranstva i mineralov tsementno-peschanoogo rastvora primeniamogo pri stroitel'stve nefteprovodov v usloviakh tsiklicheskogo zamorazhivaniia-ottauivaniia). Spitsyn, A.N., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.60-61, In Russian.

**Oil recovery, Active layer, Pipelines, Freeze thaw cycles, Grouting, Cements, Concrete hardening, Stresses.**

40-127

**Peculiarities of microstructure formation in freezing rocks.** (Osobennosti formirovaniia mikrostroeniia promerzaiushchikh porod). Lebedenko, I.U.P., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.62-63, In Russian.

**Frozen rocks, Microstructure, Cryogenic structures, Frost penetration, Soil water migration.**

40-128

**Microstructure of cryolithogenic deposits.** (Mikrostroenie kriolitogennykh otlozhenii). Zigert, Kh.G., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.63-64, In Russian.

**Active layer, Microstructure, Freeze thaw cycles, Cryogenic structures, Permafrost depth, Soil water migration, Hydrothermal processes.**

40-129

**Moisture transfer and ice separation in frozen rocks under stress gradient.** (Vlagopereenos i p'dovydenie v merzlykh porodakh pod deistviem gradianta napriazhenii). Kudriavtsev, V.A., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.64-65, In Russian.

**Ershov, E.D., Lebedenko, I.U.P., Ershov, V.D. Moisture transfer, Frozen ground physics, Frozen rocks, Shear stress, Mechanical tests, Stresses.**

40-130

**Ice formation kinetics and ice texture in freezing ground.** (Kinetika p'dobrazovaniia i struktura l'da v promerzaiushchikh gruntakh). Filatov, A.O., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottauivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.65-66, In Russian.

**Soil freezing, Frost penetration, Frozen rocks, Porous materials, Ice formation, X ray analysis, Ice texture, Water vapor, Condensation.**

40-131

**Results of experimental studies of ice formation in freezing ground.** (Nekotorye rezultaty eksperimental'nogo issledovaniia l'dobrazovaniia v promerzaiushchikh gruntakh). Korotsha, M.M., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.66-68, In Russian.

Khimenkov, A.N.  
**Soil freezing, Frozen fines, Frost penetration, Ice crystal formation, Ice crystal growth, Cryogenic structures, Cryogenic textures, Soil water migration, Clays.**

40-132

**Ice formation during ground freezing beneath a heat stamp of limited size and around pipelines.** (L'dobrazovanie pri promerzaniia gruntov pod teplovym shtampom ogranichenennykh razmerov i vokrug truboprovodov). Zhestkova, T.N., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.68-70, In Russian.

**Soil freezing, Cryogenic structures, Frozen ground, Frost penetration, Permafrost beneath structures, Soil water migration.**

40-133

**Structure and properties of cryogenic strata in the central part of the Yamal Peninsula.** (Stroenie i svoystva kriogennoi tolshchi srednei chasti poluostrova Iamal). Dubikov, G.I., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.70-80, In Russian.

**Permafrost physics, Permafrost structure, Permafrost thermal properties, Ice volume, Economic development, Salinity, Frozen rock temperature, Soil composition, Drill core analysis.**

40-134

**Structure and the formation of cryogenic texture of soils in the northeastern USSR.** (Osobennosti stroeniia i formirovaniia kriogennoi struktury pochvo-gruntov Severo-Vostochnaia SSSR). Tursina, T.V., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.73-74, In Russian.

**Taiga, Frost processes, Solifluction, Cryogenic soils, Soil formation, Soil chemistry, Permafrost depth, Cryogenic textures, Cryogenic structures, Permafrost distribution, Alpine landscapes.**

40-135

**Formation of cryogenic structures in seasonally frozen soils.** (K voprosu o krioteksturoobrazovanii v sezonno-merzlykh gruntakh). Lapshin, V.I.A., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.74-75, In Russian.

**Soil freezing, Cryogenic structures, Organic soils, Peat, Frost penetration, Seasonal freeze thaw, Clay soils, Ice formation, Layers.**

40-136

**Vertical growth of seasonal ground ice accumulation.** (K probleme vertikal'nogo rosta skoplenii sezonnogo l'da v gruntakh).

Utkin, B.V., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.75-77, In Russian.

**Ice lenses, Frost heave, Soil freezing, Ice growth, Seasonal freeze thaw, Frost penetration, Soil water migration, Ice formation.**

40-137

**Modelling the formation of cryogenic structures.** (Vyiavlenie zakonomernostei formirovaniia kriotekstur na modeliakh).

Verkhovzin, I.I., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.77-79, In Russian.

**Frozen fines, Ice formation, Models, Soil water migration, Ice accretion, Cryogenic structures, Clays, Stresses.**

40-138

**Modeling the process of ground freezing around a "pipeline".** (Rezultaty modelirovaniia protsessa promerzaniia grunta vokrug "truboprovoda"). Zhestkova, T.N., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.79-81, In Russian.

**Underground pipelines, Frozen fines, Heat transfer, Soil water migration, Frost penetration, Sands, Ice formation, Cryogenic textures, Models, Laboratory techniques, Test equipment.**

40-139

**Cryogenic structure of trap rocks in western Yakutia.** (Kriogennoe stroenie porod trappovoi formatsii (na primere Zapadnoi Iakutii)). Spesivtsev, V.I., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.81-83, In Russian.

**Igneous rocks, Fracture zones, Ice formation, Sediments, Cryogenic structures, Soil creep, Slope processes, Ice volume.**

40-140

**Composition and cryogenic structure of surface deposits in different geologic-tectonic regions of northern West Siberia.** (Formirovanie sostava i kriogennogo stroeniia poverkhnostnykh otlozhenii v razlichnykh geologo-tektonicheskikh oblastiakh severa Zapadnoi Sibiri). Belopukhova, E.B., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.83-85, In Russian.

**Sediments, Engineering geology, Cryogenic structures, Ice volume, Geocryology, Permafrost distribution, Geologic processes, Geologic structures, Topographic effects.**

40-141

**Cryogenic structure of migratory frost mounds in forest tundra and northern taiga.** (Kriogennoe stroenie migratsionnykh bugrov pucheniia zony lesotundry i severnoi taigi).

Evseev, V.P., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.85-86, In Russian.

**Frost mounds, Forest tundra, Cryogenic soils, Taiga, Origin, Soil water migration, Migration, Frost action.**

40-142

**Regularities of space variations of cryogenic structure and ice content in soils of northern West Siberia.** (Zakonomernosti prostranstvennoi izmenchivosti kriogennogo slozheniia i l'distosti gruntovykh tolshch na severe Zapadnoi Sibiri).

Kritsuk, L.N., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.87-88, In Russian.

**Active layer, Cryogenic soils, Economic development, Petroleum industry, Soil composition, Ice volume, Geologic processes, Topographic effects.**

40-143

**Dependence of soaking on cryogenic structure of frozen ground.** (Zavisimost razmokaniia ot kriogennogo stroeniia merzlykh gruntov). Zhestkova, T.N., et al, Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.92-94, In Russian.

**Soil freezing, Freeze thaw cycles, Sampling, Ground thawing.**

40-144

**Thermophysical characteristics of perennially frozen ground in the temperature range -1 to -2°C.** (O teplofizicheskikh kharakteristikakh mnogoletnemerylykh gruntov v intervale temperatur -1, -2). Shavrin, L.A., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.94-96, In Russian.

**Permafrost thermal properties, Permafrost beneath structures, Frozen rock strength, Frozen fines, Clays, Sands.**

40-145

**Allowing for seasonal variations of thermophysical properties of ground in designing the objects of petroleum industry for western Siberia.** (Uchet sezonnykh izmenenii teplofizicheskikh kharakteristik gruntov pri proektirovanii ob'ektov neftegazopromyslogo naznacheniia v Zapadnot Sibirii). Novikov, I.P., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.98-99, In Russian.

**Permafrost beneath structures, Petroleum industry, Permafrost thermal properties, Geological surveys, Geocryology, Heat transfer, Foundations, Frozen rock strength, Seasonal variations.**

40-146

**Studying strength and rheology of peat at subzero temperatures.** (Issledovanie reologicheskikh i prochnostnykh svoystv torfy pri podtatsel'nykh temperaturakh). Lishtvan, I.I., et al., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.99-101, In Russian.

**Organic soils, Frozen rock strength, Peat, Permafrost, Frost penetration, Deformation.**

40-147

**Coefficient of moisture diffusion in rocks of the lower Yenisey area.** (Koeffitsient diffuzii vlagi v porodakh nizov'ii Eniseia). Zamolotchikova, S.A., et al., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.101-103, In Russian.

**Ogienko, E.N. Geological surveys, Geocryology, Forecasting, Hydrothermal processes, Permafrost beneath structures, Roads, Pipelines, Frost action.**

40-148

**Studying physico-mechanical properties of thawing and thawed ground.** (Issledovanie fiziko-mekhanicheskikh svoystv ottaivaiushchikh i talykh gruntov polevymi metodami). Kolesov, A.A., et al., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.104-105, In Russian.

**Minkin, M.A., Shilin, N.A. Frozen ground strength, Ground thawing, Thaw weakening, Thawing rate, Cryogenic structure, Deformation, Foundations, Piles.**

40-149

**Theory of the formation of frozen ground strength.** (Nekotorye voprosy teorii formirovaniia prochnosti merzlykh gruntov). Beilin, A.I., et al., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.105-107, In Russian.

**IAkovlev, S.N. Frozen ground strength, Grain size, Water content, Analysis (mathematics).**

40-150

**Studying shearing strength of frozen ground and its adfreezing to construction materials in the temperature range 0 to -10°C.** (Issledovanie prochnosti merzlykh gruntov i prochnosti ikh sverznutii pri raznykh oblasti temperatur ot 0 do -10). Shushernina, E.P., et al., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.109-110, In Russian.

**El'mova, L.P., Sharov, A.A. Adhesion, Frozen ground strength, Wood, Shear strength, Metals.**

40-151

**Laboratory determination of frozen ground compressibility during thawing.** (Laboratornoe opredelenie szhimaemosti merzlykh gruntov pri ottaivanii). Lobanova, G.S., et al., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.110-111, In Russian.

**Orzhekhovskii, I.U.R., Lapshin, V.I.A. Ground thawing, Permafrost physics, Frost heave, Compressive properties, Settlement (structural).**

40-152

**Studying mass transfer and calculating moisture redistribution during the freezing of peat systems.** (Issledovanie kharakteristik massopereenosia i raschet pereraspredeleniia vlagi pri promerzanii torfianykh sistem). Lishtvan, I.I., et al., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.111-113, In Russian.

**Brovka, G.P., Davidovskii, P.N. Organic soils, Peat, Frost penetration, Soil water migration, Mass transfer, Mathematical models.**

40-153

**Investigating thermal creep of ice-containing stone materials.** (Issledovanie termopolzuchesti kamennolodnykh materialov). Gavrilov, A.N., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.113, In Russian.

**Gravel, Sands, Frost penetration, Ice volume, Frozen fines, Permafrost beneath structures, Foundations, Bearing strength, Creep.**

40-154

**Deformative properties of frozen hard rocks in the Vorkuta area during thawing.** (Deformativnye svoystva merzlykh skal'nykh porod Vorkutinskogo raiona pri ottaivanii). Ponomarev, V.D., et al., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.114-115, In Russian.

**Vodolazkin, V.M., Sorokin, V.A., Fedoseev, I.U.G. Fracture, Ground ice, Frozen rocks, Deformation, Sands, Ground thawing, Clays, Coal.**

40-155

**Changes in physico-mechanical properties of freezing and thawing fine-grained ground in low-pressure dams.** (Izmeneniia fiziko-mekhanicheskikh svoystv promerzaiushchikh i protaivaiushchikh dispersnykh gruntov v plotinakh nizkogo napora). Chizhan, R.V., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.116-117, In Russian.

**Earth dams, Frozen fines, Permafrost beneath structures, Active layer, Hydrothermal processes, Freeze thaw cycles, Fracturing.**

40-156

**Deformation of frozen hard rocks in the Kodar intrusive complex.** [Osobennosti deformirovaniia merzlykh skal'nykh porod Kodarskogo intruzivnogo kompleksa]. Serova, G.E., Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.117-119, In Russian.

**Deformation, Permafrost distribution, Igneous rocks, Fracturing, Earthquakes, Ice formation, Stresses.**

40-157

**Dependence of electrical properties of frozen ground on its cryogenic structure.** [Zavisimost' elektricheskikh svoistv merzlykh gruntov ot ikh kriogennoy stroeniia]. Zhestkova, T.N., et al, Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.119-121, In Russian.

**Frozen fines, Ice formation, Frozen ground physics, Electrical properties, Cryogenic structure, Minerals, Ice volume.**

40-158

**Approximation of the family of curves describing moisture transfer in fine grained rocks.** [Approximatsiya semestva krivykh opisyvayushchikh vlagopereenos v dispersnykh porodakh]. Rudykh, O.L., Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.122-124, In Russian.

**Moisture transfer, Frozen fines, Mathematical models.**

40-160

**Studying the intensity of frost heave of ground with depth.** [Issledovanie intensivnosti moroznogo pucheniia grunta po glubine]. Fyshech, N.F., et al, Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.125-127, In Russian.

**Active layer, Frost heave, Clay soils, Seasonal freeze thaw, Frost penetration, Soil water migration, Ice formation, Cryogenic structures, Mathematical models.**

40-161

**Influence of the composition of loose deposits on frost heave of rocks.** [Vliianie sostava rykhlykh otlozhenii na puchenie porod]. Zamolotchikova, S.A., Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.128-130, In Russian.

**Frozen fines, Noncohesive soils, Frost heave, Soil freezing, Soil water migration, Ice formation, Snow cover effect.**

40-162

**Structural peculiarities of pipelines build in frost-heave areas.** [Osobennosti ustroistva truboprovodov zalozhennykh v zone promerzaniia puchinystrykh glineyev]. Alekseev, S.I., et al, Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.130-132, In Russian.

**Pipelines, Seasonal freeze thaw, Frost heave, Construction materials, Reinforced concretes, Asbestos, Plastics.**

40-163

**Geocryological investigations in forecasting and exploitation for hydrocarbon deposits.** [Geokriologicheskie issledovaniia pri prognozirovanii i poiskakh mestorozhdenii uglevodorodov]. Ginsburg, G.D., et al, Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.135-136, In Russian.

**Geological surveys, Permafrost structure, Permafrost distribution, Geophysical surveys, Petroleum industry, Exploration, Crude oil, Natural gas, Clathrates.**

40-164

**Introduction of cryolithological studies into the practice of engineering-geological research.** [Vnedrenie kriolitologicheskikh issledovanii v praktiku inzhenerno-geologicheskikh izyskani]. Usov, V.A., Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.136-138, In Russian.

**Geocryology, Engineering geology, Research projects, Permafrost structure, Permafrost origin, Surveys, Mapping.**

40-165

**Peculiarities of engineering-geocryolithological conditions of massive peat in northern taiga of West Siberia.** [Nekotorye osobennosti inzhenerno-geokriologicheskikh uslovii torfianykh massivov severnoi taigi Zapadnoi Sibiri]. Danilova, N.S., et al, Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.138-139, In Russian.

**Streletskaia, I.D. Taiga, Permafrost origin, Paludification, Organic soils, Hydrothermal processes, Cryogenic soils, Geologic processes, Permafrost distribution, Permafrost structure.**

40-166

**Regularities governing the formation of new active layer along the contour of slopes of deep quarries in Yakutia.** [Zakonomenosti formirovaniia novogo deiatel'nogo sloia po konturu otkosov glubokikh kar'erov Iakutii].

Baranuk, V.A., Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.143-145, In Russian.

**Quarries, Slope processes, Active layer, Mining, Permafrost distribution, Permafrost thermal properties, Permafrost transformation.**

40-167

**Compilation of auxiliary charts of components of engineering-geocryological conditions for surveys in western Siberia.** [Kompilatsiya sostavleniya vspomogatel'nykh khar't i khar'tov dlia inzhenerno-geokriologicheskikh slozhitel'nykh provedenii s'emki (na primere Zapadnoi Sibiri)]. Nevecheria, V.L., Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.149-151, In Russian.

**Mapping, Geological maps, Economic development, Permafrost hydrology, Geocryology, Permafrost distribution, Petroleum industry, Permafrost beneath structures.**

40-159

**Dependence of frost heave on the frost-penetration regime.** [Zavisimost' puchinistosti gruntov ot rezhima promerzaniia]. Ganeles, L.B., et al, Issledovanie sostava, stroeniia i svoistv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.124-125, In Russian.

**Soil freezing, Soil water migration, Frost heave, Cooling rate, Frost penetration.**

40-168

Some engineering and geological peculiarities of frozen rocks in the central Angara River area. (Nekotorye inzhenerno-geologicheskie osobennosti merzlykh porod Srednego Priangaria). Brovkin, A.N., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.151-153, In Russian.  
Spurza, M.A.  
Frozen fines, Sporadic permafrost, Cryogenic structures, Foundations, Piles, Clays, Economic development, Loams, Sands, Ground ice, Ice volume.

40-169

Calculating ground temperature at phase transitions of moisture. (K raschetu temperatur grunta pri fazovykh perekhodakh vlazgi). Kononov, A.A., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.155-156, In Russian.  
Soil freezing, Frost penetration, Soil water migration, Phase transformations, Frozen ground temperature.

40-170

Applying variational principles of conformal mapping to the freezing and thawing of ground. (Primenenie variatsionnykh printsipov konformnogo otobrazheniia pri promerzani i ottaivani grunta). Ashpiz, E.S., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.161-163, In Russian.  
Soil freezing, Frost penetration, Frozen ground temperature, Freeze thaw cycles.

40-171

Forecasting the interaction between producing wells and permafrost. (Prognoz vzaimodelstviia ekspluatatsionnykh skvazhin s mnogoletnemerzlymi porodami). Badu, I.U.B., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.159-160, In Russian.  
Makogon, I.U.F., Dubikov, G.I., Koleshev, N.R.  
Natural gas, Gas wells, Permafrost thermal properties, Well casings, Heat transfer.

40-172

Thermomechanical enthalpy model of freezing, thawing and frozen ground. (Termomekhanicheskaiia ental'pnaia model' promerzaiushchikh, ottaivaiushchikh i merzlykh gruntov). Kronik, I.A.A., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.161-163, In Russian.  
Models, Soil water migration, Stefan problem, Phase transformations, Enthalpy, Soil freezing, Frozen ground temperature, Thermal stresses, Frost penetration, Heat transfer.

40-173

Mathematical model of the dependence of enthalpy (heat content) of ground on temperature in the area of intensive phase transformations of ground water, for numerical engineering calculations. (O matematicheskoi modeli zavisimosti entalpii (teplosoderzhanii) grunta ot temperatury v oblasti intensivnykh fazovykh perekhodov vlazgi v grunte dlia chislennykh inzhenernykh raschetov). Plotnikov, A.A., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.163-165, In Russian.  
Makarov, V.I., Abramov, B.I.  
Soil freezing, Phase transformations, Hygroscopic water, Freeze thaw cycles, Mathematical models, Ground water.

40-174

Moisture migration in fine soils under nonequilibrium conditions. (Migratsiia vlazgi pri neravnovesnykh usloviakh v disperznykh gruntakh). Daniel'son, I.U.S., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.165-166, In Russian.  
IANitskil, P.A.  
Soil freezing, Frost penetration, Soil water migration, Phase transformations, Heat transfer, Mass transfer, Freeze thaw cycles, Mathematical models.

40-175

Basic requirements for forecasting engineering-geocryological conditions at different design stages of main gas pipelines. (Osnovnye trebovaniia k prognozu inzhenerno-geokriologicheskikh uslovii na razlichnykh stadiakh proektirovaniia magistral'nykh gazoprovodov). Makhonin, G.I., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.166-168, In Russian.  
Gas pipelines, Permafrost forecasting, Permafrost beneath structures, Permafrost transformation, Environmental protection.

40-176

Optimizing engineering-geocryological investigations for the design and construction of underground storage for light petroleum products. (K voprosu optimizatsii inzhenerno-geokriologicheskikh izyskanii dlia proektirovaniia i stroitel'stva podzemnykh khranilishch svetlykh nefteproduktov). Lapochkin, B.K., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.168-170, In Russian.  
Sudarikov, I.U.F.  
Underground facilities, Underground storage, Permafrost, Design, Construction.

40-177

Classification of the state of permafrost as a basis for geocryological regionalization. (Klassifikatsiia sostoiianii tolshch merzlykh porod territorii osnovna geokriologicheskogo raionirovaniia). Bobov, N.G., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.172-173, In Russian.  
Mapping, Permafrost distribution, Landscape types, Classifications.

40-178

Classification of permafrost types of the Pur-Nadym interfluv. (Klassifikatsiia tipov tolshch mnogoletnemerzlykh porod Pur-Nadym'skogo mezhdurech'ia). Kritsuk, L.N., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.173-175, In Russian.  
Mapping, Pipelines, Engineering geology, Geocryology, Surveys, Economic development, Forest tundra, Taiga, Paludification.

40-179

Classification of frozen rocks according to their resistance to water erosion for obtaining the required stability of engineering structures in coastal zones of northern seas and rivers. (Klassifikatsiia merzlykh porod po razmyvaemosti dlia tselei obespecheniia protivooeroziionnoi ustoiichivosti inzhenernykh sooruzhenii v pribrezhnoi zone severnykh morei i rek). Malinovskii, D.V., Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.175-176, In Russian.  
Frozen fines, Organic soils, Peat, Water erosion, Thermal stresses, Hydraulic structures, Shores, Cryogenic structures.

40-180

**Permafrost classification in accordance with the problems of well construction.** (Klassifikatsiya mnogoletnemerzlykh porod v sootvetstvi s zadachami stroitel'stva skvazhin). Orlov, A.V., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.177-179. In Russian.

Gumeniuk, A.S., Polozkov, A.V., Nikitin, V.N. **Permafrost structure, Permafrost thermal properties, Drilling, Wells, Ice volume, Classifications.**

40-181

**Studying temperature fields in freezing ground around steam-heating pipes.** (Issledovanie temperaturnykh polet promerzaiushchego grunta v zone vozdeistviia teploprovodov). Sobolev, V.G., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.180-181. In Russian.

Koshelev, A.A. **Foundations, Underground facilities, Permafrost beneath structures, Heating, Pipelines, Seasonal freeze thaw, Municipal engineering, Phase transformations, Buildings.**

40-182

**Thermal regime of underground structures in frozen ground containing positive-temperature fluids.** (O teplovom rezhime podzemnykh sooruzhenii v merzlykh porodakh pri zapolnenii zhidkostiami s polozhitel'noi temperaturoi). Lubeznova, L.V., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.181-182. In Russian.

Silvestrov, L.K. **Underground facilities, Underground storage, Walls, Glaze, Ice accretion.**

40-183

**Studying the process of frozen-base formation using vertical cooling devices.** (Issledovanie protsessov formirovaniia merzlogo osnovaniia vertikal'nymi okhlazhdaushchimi ustroistvami). Mironburg, I.U.S., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.182-184. In Russian.

Fedorov, I.U.G. **Artificial cooling, Cooling systems, Frozen ground strength, Frozen fines, Models.**

40-184

**Calculating soil temperature field around thermopiles.** (Raschet temperatur'nogo polia grunta vokrug termospil). Gorelik, I.A.B., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.184-185.

Izmailov, I.G. **Permafrost control, Artificial cooling, Thermopiles, Foundations, Permafrost beneath structures.**

40-185

**Strengthening ice-rich ground by reinforcements.** (Ob ukreplenii l'donasyshchennogo grunta armirovaniem). Kononov, A.A., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.186-188. In Russian.

Pakhomov, S.M. **Permafrost structure, Frozen rock strength, Ice strength, Ground ice, Reinforced ice, Sawdust.**

40-186

**Studying peat adfreezing to different hard surfaces.** (Issledovanie primerzaniia torfa k razlichnym tverdyim poverkhnostiam). Lishtvan, I.L., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.188-189. In Russian.

Tanovitskii, V.I., Davidovskii, P.N. **Peat, Transportation, Frozen cargo, Adhesion, Countermeasures.**

40-187

**Studying shell-foundations for buildings and structures erected on permafrost according to the first principle.** (Issledovaniia fundamenta-obolochki dlia stroitel'stva zdani i sooruzhenii po pervomu printsipu na mnogoletnemerzlykh gruntakh). Goncharov, I.U.M., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.190-191. In Russian.

**Continuous permafrost, Buildings, Foundations, Rock fills, Prefabrication, USSR—Yamal Peninsula.**

40-188

**Using polymer thermoinsulating materials for controlling the freezing and thawing of ground.** (K voprosu ispol'zovaniia polimernykh teploizolatsionnykh materialov dlia kontrolirovaniiia zamrozheniia i ottaivaniia grunta). Gorbacheva, V.M., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.191-194. In Russian.

**Soil freezing, Frost protection, Thermal insulation, Polymers.**

40-189

**Development and investigation of cementing solutions for finishing wells drilled in permafrost.** (Razrabotka i issledovanie tsmentozhnykh rastvorov dlia tsementirovaniia skvazhin v mnogoletnemerzlykh porodakh). Bakshutov, V.S., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.194-196. In Russian.

Nikitin, V.N., Bondarenko, V.V., Iliukhin, V.V. **Wells, Well casings, Grouting, Cements, Permafrost.**

40-190

**Controlling temperature regime of bases in northern construction. Possibilities and problems.** (Upravlenie temperaturnym rezhimom osnovanii v severnom stroitel'stve. Vozmozhnosti i zadachi). Makarov, V.I., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.197-199. In Russian.

**Foundations, Permafrost beneath structures, Permafrost control, Thermopiles, Discontinuous permafrost, Sporadic permafrost.**

40-191

**Experience in using thermal devices for increasing the bearing strength of perennially frozen ground.** (Opyt primeneniia termoustanovok dlia povysheniia nesushchego sposobnosti vechnomerzlykh gruntov). Minkin, M.A., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.199-200. In Russian.

**Foundations, Permafrost control, Thermopiles, Permafrost beneath structures, Artificial freezing, Bearing strength, Thermal insulation, Peat.**

40-192

**Rational use of thermosiphons in foundation construction of the North.** (K voprosu o ratsional'nom ispol'zovanii termospilov pri stroitel'stve osnovanii v severnom stroitel'stve). Makarov, V.I., et al. Issledovanie sostava, stroeniia i svoystv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.201-203. In Russian.

**Artificial cooling, Permafrost control, Foundations, Permafrost beneath structures, Thermopiles.**

- 40-193** Heating efficiency and performance peculiarities of cooling devices designed for natural circulation of coolants in thermosiphons. (Teplovaia effektivnost' i osobennosti raboty okhlazhdaushchikh ustroystv s estestvennoi tairkuliatsiei teplonositelia termosifonov), Makarov, V.I., Issledovanie sostava, stroeniia i svolstv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.203-205, in Russian.
- Cooling system, Artificial freezing, Thermopiles, Permafrost control, Permafrost beneath structures, Permafrost bases, Cooling rate.**
- 40-194** Cooling plastic-frozen grounds with air-convection cooling systems. (Okhlazhdenie plastichno-merzlogo grunta s pomoshch'iu VKO), Konovalov, A.A., et al, Issledovanie sostava, stroeniia i svolstv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.205-206, in Russian.
- Rastegaev, I.K., Grebenets, V.I. Permafrost control, Cooling systems, Pipes (tubes), Air flow, Foundations, Permafrost beneath structures, Permafrost control, Wind factors.**
- 40-195** Hydraulic thawing of coarse elastic rocks, with open pores, in dam construction. (Gidra-licheskie ottaivanie krupnooblochnykh porod s otkrytymi porami pri vozvedenii plotin), Shatygina, V.A., Issledovanie sostava, stroeniia i svolstv merzlykh, promerzaiushchikh i ottaivaiushchikh porod s tsel'iu naibolee ratsional'nogo proektirovaniia i stroitel'stva. Shkola-seminar, Moscow, Feb. 17-19, 1981. Tezisy dokladov (Seminar on the investigation of composition, structure and properties of frozen, freezing and thawing rocks for obtaining most rational design and construction techniques, Moscow, Feb. 17-19, 1981. Summaries of reports) edited by V.A. Kudriavtsev, Moscow, Universitet, 1981, p.208-209, in Russian.
- Artificial melting, Hydraulic structures, Earth dams, Embankments, Clastic rocks, Grain size, Porosity.**
- 40-196** Proceedings. Ground freezing. International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985, Rotterdam, A.A. Balkema, 1985, 373p., Refs. passim. For individual papers see 40-197 through 40-244.
- Kinoshita, S., ed, Fukuda, M., ed. Frozen ground physics, Frozen ground mechanics, Soil freezing, Frost heave, Soil water migration, Soil creep, Freeze thaw cycles, Underground storage, Pressure, Meetings, Thermal properties.**
- 40-197** Study of thermal cracks in frozen ground, No.3. Xia, Z., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.3-7, 6 refs.
- Frozen ground mechanics, Cracking (fracturing), Thermal effects, Tensile properties, Frozen ground strength, Elastic properties, Temperature gradients, Frozen ground temperature, Frost penetration, Countermeasures, Frost penetration.**
- 40-198** Electrical potentials developed during thawing of frozen ground. Parameswaran, V.R., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.9-15, 16 refs.
- Mackay, J.R., Johnston, G.H. Ground thawing, Active layer, Electrical properties, Hummocks, Gravel, Soil water. Tests.**
- 40-199** Sensitivity of thermal predictions to assumptions in soil properties. Smith, M.W., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.17-23, 5 refs.
- Riesborough, D.W. Frozen ground temperature, Thermal properties, Frost penetration, Heat capacity, Unfrozen water content, Thermal conductivity, Latent heat, Frost forecasting, Accuracy.**
- 40-200** Mechanism for the existence of an unfrozen liquid in the vicinity of a solid surface. Iwata, S., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.25-31, 15 refs.
- Frozen ground thermodynamics, Soil water, Unfrozen water content, Frozen ground temperature, Solid phases, Analysis (mathematics), Particles, Molecular energy levels, Interfaces.**
- 40-201** Determination of unfrozen water content by DSC. Horiguchi, K., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.33-38, 9 refs.
- Unfrozen water content, Frozen ground temperature, Soil water, Temperature measurement, Latent heat.**
- 40-202** Theoretical study of frost heaving—Kinetic process at water layer between ice lens and soil particles. Kuroda, T., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.39-45, 11 refs.
- Frost heave, Ice lenses, Unfrozen water content, Frozen ground thermodynamics, Thermodynamics, Particles, Soil water migration, Vapor pressure, Soil freezing.**
- 40-203** Thermal aspects of frost action. McCabe, E.Y., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.47-54, 13 refs.
- Kettle, R.J. Frost action, Frost heave, Thermal effects, Heat transfer, Frost resistance, Thermal conductivity, Grain size, Soil freezing, Soil water, Time factor.**
- 40-204** Underground cryogenic cavities—Field measurements and numerical methods. Cames-Pintaux, A.M., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.55-61, 12 refs.
- Nguyen-Lamba, M., Aguirre-Puente, J. Geocryology, Thermokarst, Underground storage, Underground pipelines, Permafrost heat transfer, Phase transformations, Liquefied gases, Heat capacity, Thermal conductivity, Density (mass/volume), Mathematical models.**
- 40-205** Analysis of large scale laboratory and in situ frost heave tests. Knutsson, S., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.65-70, 11 refs.
- Domaschuk, L., Chandler, N. Frost heave, Frost penetration, Unfrozen water content, Soil water migration, Frost action, Particle size distribution, Tests.**
- 40-206** Experimental study of final ice lens growth in partially frozen saturated soil. Ishizaki, T., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.71-78, 9 refs.
- Nishio, N. Ice lenses, Ice growth, Frozen ground temperature, Frost heave, Saturation, Experimentation, Temperature effects, Water intakes, Time factor.**
- 40-207** Growth and migration of ice lenses in partially frozen soil. Ohrai, T., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.79-84, 5 refs.
- Yamamoto, H. Frozen ground, Ice lenses, Ice growth, Frost heave, Soil freezing, Particle size distribution, Migration, Soil water migration.**
- 40-208** Moisture movement in freezing soils under constant temperature condition. Yanagisawa, E., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.85-91, 8 refs.
- Yao, Y.J. Soil freezing, Soil water migration, Frost penetration, Frost heave, Unfrozen water content, Temperature effects, Saturation, Water pressure, Analysis (mathematics), Models.**
- 40-209** Some developments of a rigid-ice model of frost heave. Holden, J.T., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.93-99, 15 refs.
- Piper, D., Jones, R.H. Frost heave, Soil water migration, Water pressure, Mathematical models, Frost forecasting, Time factor.**
- 40-210** Frost heave theory of saturated soil coupling water/heat flow and its application. Ryokai, K., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.101-108, 5 refs.
- Frost heave, Soil water migration, Heat transfer, Soil freezing, Frozen ground mechanics, Freezing rate, Water flow, Pressure, Theories, Tests, Analysis (mathematics).**
- 40-211** Numerical analysis of frost heaving based upon the coupled heat and water flow model. Fukuda, M., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.109-117, 15 refs.
- Nakagawa, S. Frost heave, Soil water migration, Heat transfer, Soil freezing, Unfrozen water content, Analysis (mathematics), Models, Neutron scattering, Temperature distribution.**
- 40-212** Calculation of normal frost heave force. Guo, M., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.119-122.
- Han, H. Frost heave, Foundations, Frozen ground physics, Soil freezing, Elastic properties, Pressure, Soil physics, Analysis (mathematics).**

40-213

**Experimental study on factors affecting water migration in frozen morin clay.**

Xu, X., et al, MP 1897, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.123-128.

Oliphant, J.L., Tice, A.R.

**Frozen ground physics, Soil water migration, Clay soils, Frost heave, Density (mass/volume), Saturation, Soil freezing, Temperature gradients, Tests.**

The amount of water migration in an unsaturated frozen soil, morin clay, was determined in horizontally closed soil columns under linear temperature gradients. The temperature at the warm end of the soil column was below its freezing point at the initial water content in order to keep the soil specimen always in the frozen state during testing. The flux of water migration was calculated from the distribution curves of the total water content before and after testing. Four factors affecting the flux, including temperature, temperature gradient, test duration and the dry density of the soil, were investigated. It was found that the flux is directly proportional to the temperature gradient, is inversely proportional to the square root of the test duration, decreases with the decrease in temperature in the power law form, and changes with the dry density. The behavior of water migration in unsaturated, frozen morin clay is something like that in the unsaturated, unfrozen soils.

40-214

**Frost heave and clay expansion in freshwater clays.**

Czurda, K.A., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.129-136, 5 refs.

Wagner, J.F.

**Frost heave, Frozen ground expansion, Clay soils, Freeze thaw cycles, Soil freezing, Particle size distribution, Clay minerals, Ice lenses.**

40-215

**Frost heave characteristics and scale effect of stationary frost heave.**

Akagawa, S., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.137-143, 8 refs.

Yamamoto, Y., Hashimoto, S.

**Frost heave, Ice lenses, Frozen ground mechanics, Pressure, Temperature gradients, Tests, Time factor, Frost action.**

40-216

**Stress on reinforcing ribs and concrete strain from in-situ measurement during shaft-sinking by freezing process.**

Chou, W., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.147-151, 3 refs.

**Shaft sinking, Artificial freezing, Reinforced concretes, Stresses, Strains, Time factor.**

40-217

**Strain rate effect on the tensile strength of frozen silt.**

Zhu, Y., et al, MP 1898, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.153-157, 9 refs.

Carbee, D.L.

**Frozen ground strength, Permafrost physics, Strains, Tensile properties, Temperature effects, Density (mass/volume), Tests.**

Tension tests at constant rates were conducted on remolded saturated frozen Fairbanks silt with medium density at -5°C for various machine speeds. It is found that the tensile strength depends strongly upon strain rate and the critical strain rate for ductile-brittle transition was about 1/1000. The peak tensile strength considerably decreases with decreasing strain rate for ductile failure, while it slightly decreases with increasing strain rate in the brittle region. The failure strain also varies with strain rate, but the initial tangent modulus is found not to be dependent upon strain rate.

40-218

**Thaw-consolidation behavior of seasonally frozen soils.**

Tong, C., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.159-163, 4 refs.

Chen, E.

**Seasonal freeze thaw, Thaw consolidation, Frozen ground, Permafrost, Settlement (structural), Loads (forces), Tests.**

40-219

**Stress distribution in frost heaving soils.**

Wood, J.A., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.165-171, 10 refs.

Williams, P.J.

**Frozen ground strength, Frost heave, Ice lenses, Stresses, Water pressure, Ice growth, Thermodynamics, Temperature effects, Analysis (mathematics).**

40-220

**Time-dependence and volumetric change characteristic of frozen sand under triaxial stress condition.**

Shibata, T., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.173-179, 13 refs.

**Frozen ground mechanics, Frozen ground strength, Sands, Stress strain diagrams, Compressive properties, Time factor, Volume, Temperature effects, Experimentation.**

40-221

**New Norwegian creep model and creep equipment.**

Berggren, A.-L., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.181-185, 8 refs.

Furuberg, T.

**Frozen ground mechanics, Soil creep, Stresses, Unfrozen water content, Mathematical models, Time factor.**

40-222

**Alteration of soil behaviour after cyclic freezing and thawing.**

Yong, R.N., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.187-195, 8 refs.

Boonvinsuk, P., Yin, C.W.P.

**Freeze thaw cycles, Frozen ground mechanics, Frozen ground strength, Soil water migration, Shear strength, Ice crystal growth.**

40-223

**Effect of saturation level and freeze-thaw cycling on the properties of clayey soil frost heaving.**

Xie, Y., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.197-200, 3 refs.

Wang, J.

**Freeze thaw cycles, Soil water, Frost heave, Clay soils, Saturation, Density (mass/volume), Shear strength, Tests.**

40-224

**Effect of freezing-thawing on the mechanical properties of soil.**

Ogata, N., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.201-207, 6 refs.

Kataoka, T., Komiya, A.

**Frozen ground mechanics, Freeze thaw cycles, Soil mechanics, Soil strength, Frozen ground strength, Artificial freezing, Rheology, Pressure, Stress strain diagrams.**

40-225

**Soils frost heaving and thaw settlement.**

Blanchard, D., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.209-216, 9 refs.

Fremont, M.

**Frost heave, Freeze thaw cycles, Settlement (structural), Frozen ground thermodynamics, Frozen ground mechanics, Soil water migration, Thaw weakening, Soil mechanics, Unfrozen water content, Models.**

40-226

**Temperature dependencies of mechanical properties of soils subjected to freezing and thawing.**

Aoyama, K., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.217-222, 3 refs.

Ogawa, S., Fukuda, M.

**Frozen ground mechanics, Soil mechanics, Freeze thaw cycles, Soil water migration, Frost heave, Ground thawing, Temperature effects, Stresses, Strains.**

40-227

**Pore pressure in thawing soil.**

Ryden, C.G., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.223-226, 6 refs.

**Water pressure, Ground thawing, Compressive properties, Temperature distribution, Analysis (mathematics), Tests.**

40-228

**Acoustic and mechanical properties of frozen sand.**

Baker, T.H.W., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.227-234, 11 refs.

Kurfurst, P.J.

**Frozen ground physics, Sands, Frozen ground mechanics, Acoustic measurement, Frozen ground strength, Elastic properties, Salinity, Compressive properties, Density (mass/volume), Sound waves.**

40-229

**Mechanical behaviour of frozen sand down to cryogenic temperatures.**

Bourbonnais, J., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.235-244, 29 refs.

Ladanyi, B.

**Frozen ground mechanics, Sands, Low temperature tests, Stress strain diagrams, Frozen ground strength, Compressive properties, Seismology, Thermal expansion, Microstructure.**

40-230

**Deformation behaviour of frozen sand and its physical interpretation.**

Orth, W., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.245-253, 9 refs.

**Frozen ground mechanics, Frozen ground physics, Sands, Stress strain diagrams, Soil creep, Deformation, Pressure, Temperature effects, Strain tests, Rheology, Analysis (mathematics).**

40-231

**Field and laboratory measurements of seismic and mechanical properties of frozen ground.**

Kurfurst, P.J., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.255-262, 3 refs.

Pullan, S.

**Frozen ground mechanics, Frozen ground physics, Subsea permafrost, Seismic refraction, Bottom sediment, Ocean bottom, Shear strength, Compressive properties, Boreholes, Acoustic measurement, Beaufort Sea.**

40-232

**Industrial tests on application of liquid nitrogen for ground freezing.**

Ostrowski, W.J., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.265-275, 1 ref.

**Artificial freezing, Liquefied gases, Thermodynamics, Soil freezing, Temperature distribution, Tests.**

40-233

Sand ground freezing for the construction of a subway station in Brussels.

Gonze, P., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.277-283, 2 refs.

Lejeune, M., Monjoie, A., Thimus, J.F. Soil freezing, Artificial freezing, Sands, Rheology, Soil water, Tunneling (excavation).

40-234

Monitoring the closure of a freeze wall cofferdam by water level observation.

Tobe, N., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.285-290, 3 refs.

Katou, T., Watanabe, T. Soil freezing, Artificial freezing, Waterproofing, Water level, Walls, Analysis (mathematics), Excavation, Models.

40-235

Pipelines surcharge by seasonally frozen soils.

Bahmanyar, G.H., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.291-296, 19 refs.

Harrison, P.J. Soil freezing, Underground pipelines, Loads (forces), Shear strength, Frozen ground strength, Water pressure, Seasonal freeze thaw, Experimentation, Damage, Frost penetration.

40-236

Observations and prediction of frost heave of an experimental pipeline.

Smith, M.W., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.297-304, 12 refs.

Dallimore, S.R., Kettler, R.J. Frost heave, Underground pipelines, Frost resistance, Frozen ground mechanics, Freeze thaw cycles, Ground ice, Ice formation, Sands, Soil water migration, Temperature gradients, Frost penetration.

40-237

Geothermal considerations for wood chips used as permafrost insulation.

McRoberts, E.C., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.305-312, 16 refs.

Nixon, J.F., Hanna, A.J., Pick, A.R. Permafrost preservation, Slope protection, Underground pipelines, Thermal insulation, Geothermy, Ground thawing, Countermeasures, Freeze thaw cycles, Thaw depth, Materials.

40-238

Modes of ice-pull action in foundation and its prevention under ice covering.

Yu, B., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.313-317, 3 refs.

Qu, X. Foundations, Pile extraction, Ice push, Piers, Ice cover effect, Ice cover thickness, Countermeasures, Design.

40-239

Laboratory performance tests of cryogenic earth pressure cells.

Nishibayashi, K., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.319-325, 4 refs.

Ueno, T., Sato, T. Frozen ground mechanics, Frozen ground physics, Loads (forces), Underground storage, Storage tanks, Soil pressure, Artificial freezing, Soil freezing, Liquefied gases, Tests.

40-240

Frozen earth pressure on the inground LNG tank wall.

Goto, S., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.327-335, 5 refs.

Watanabe, O., Nojiri, Y., Tanaka, M. Frozen ground physics, Soil pressure, Storage tanks, Underground storage, Artificial freezing, Soil freezing, Loads (forces), Liquefied gases, Measuring instruments, Computer applications, Distribution.

40-241

Measurement of frost heaving pressure on an LNG inground tank.

Goto, S., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.337-341, 4 refs.

Watanabe, O., Iguro, M., Nakajima, T. Frost heave, Soil pressure, Underground storage, Storage tanks, Artificial freezing, Soil freezing, Loads (forces), Liquefied gases, Design, Countermeasures.

40-242

Freeze wall strength and stability design problems in deep shaft sinking—is current theory realistic.

Auld, F.A., Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.343-349, 15 refs.

Artificial freezing, Shaft sinking, Soil freezing, Frozen ground strength, Linings, Soil stabilization, Design, Deformation.

40-243

Determination of the tangential heave force on the pile foundation in seasonal frozen zone.

Sui, X., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.351-356, 4 refs.

Zuo, L. Frost heave, Loads (forces), Foundations, Soil pressure, Soil freezing, Bridges, Freeze thaw cycles, Static stability, Frozen ground mechanics, Design.

40-244

Deep frozen shaft with gliding liner system.

Hegemann, J., et al, Ground freezing. Proceedings of the 4th International Symposium on Ground Freezing, Sapporo, Japan, Aug. 5-7, 1985. Edited by S. Kinoshita and M. Fukuda, Rotterdam, A.A. Balkema, 1985, p.357-373, 11 refs.

Jessberger, H.L. Artificial freezing, Shafts (excavations), Freeze pipes, Frozen ground physics, Stress strain diagrams, Frozen ground mechanics, Geology, Shaft sinking, Soil creep, Design.

40-245

Eolian deflation by ancient katabatic winds: a late Quaternary example from the north Alaska Range.

Thorson, R.M., et al, Geological Society of America. Bulletin, June 1985, 96(6), p.702-709, 48 refs.

Bender, G. Eolian soils, Wind erosion, Periglacial processes, Mountain glaciers, Meltwater, Paleoclimatology, United States—Alaska—Alaska Range.

40-246

Bank-erosion processes in a cool-temperature environment, Orwell Lake, Minnesota.

Reid, J.R., Jr., Geological Society of America. Bulletin, June 1985, 96(6), p.781-792, 49 refs.

Banks (waterways), Soil erosion, Seasonal freeze thaw, Shore erosion, Slope processes, Mudflows, Rain.

40-247

Quaternary sedimentation in Shelikof Strait, Alaska.

Hampton, M.A., Marine geology, Jan. 1985, 62(3/4), p.213-253.

Quaternary deposits, Ice scoring, Marine deposits, Bottom topography, Ocean bottom, Pleistocene, Stratigraphy, Particle size distribution, United States—Alaska—Shelikof Strait.

40-248

Thermal regime of arctic ice cover in wintertime, when the radiation balance of its upper surface is changed artificially. [Termicheskiy rezhim arkticheskogo ledianogo pokrova v zimnee vremia pri iskusstvennom izmenenii radiatsionnogo balansa ego verkhnei poverkhnosti].

Bogorodskii, V.V., et al, Meteorologiya i gidrologiya, May 1984, No.5, p.64-71, In Russian with English summary. 7 refs.

Sukhorukov, K.K. Ice cover thickness, Ice surface, Radiation balance, Heat transfer, Mathematical models, Arctic Ocean.

40-249

Thermal influence of submerged buoyant jet on sea ice cover. [Teplotovoe vozdeistvie zatoplennoi plavuchei strui na morskoi ledianoi pokrov].

Bogorodskii, V.V., et al, Akademiya nauk SSSR. Izvestiya. Fizika atmosfery i okeana, July 1983, 19(7), p.724-729, In Russian with English summary. 5 refs.

Sukhorukov, K.K. Ice bottom surface, Ocean currents, Convection.

40-250

Physical conditions of ice cover melting, starting from bottom surface, in Arctic seas. [Fizicheskie uslovia taianiia ledianogo pokrova arkticheskikh morei s nizhnei poverkhnosti].

Bogorodskii, V.V., et al, Akademiya nauk SSSR. Izvestiya. Fizika atmosfery i okeana, Aug. 1983, 19(8), p.885-887, In Russian. 1 ref.

Sukhorukov, K.K. Ice water interface, Sea ice distribution, Ice cover thickness, Ice bottom surface, Ice density, Heat transfer, Ice melting.

40-251

Probing of marine hummock ice using cepstral radar.

Bogorodskii, V.V., et al, Soviet physics. Technical physics, July 1983, 28(7), p.839-841, Translated from zhurnal tekhnicheskoi fiziki. 4 refs.

Oganesian, A.G. Radar echoes, Sea ice distribution, Ice cover thickness, Pressure ridges, Drift.

40-252

Sensitivity of radar measurements to errors in the electrical parameters of ice.

Bogorodskii, V.V., et al, Soviet physics. Technical physics, July 1983, 28(7), p.841-842, Translated from Zhurnal tekhnicheskoi fiziki. 5 refs.

Oganesian, A.G. Radio echo soundings, Ice cover thickness, Radio waves, Radiometry, Accuracy.

40-253

4 x CO2 integration with prescribed changes in sea surface temperature.

Mitchell, J.F.B., et al, Interaction between climate and biosphere: transactions of the C.E.C. symposium in Osnabrück, March 21-23, 1983. Edited by H. Lieth, R. Fantechi and H. Schnitzler. (Progress in biometeorology, vol. 3), Lisse, Swets & Zeitlinger, 1984, p.353-374, With German summary. 12 refs.

Lupton, G. DLC QC980.155

Sea ice distribution, Heat flux, Models.

A three year experiment in which atmospheric CO2 was increased by a factor of 4 has been made with the Meteorological Office general circulation model. Changes in sea surface temperatures were prescribed as a function of latitude on the basis of earlier experiments with prescribed changes in CO2 and surface temperatures. Sea-ice extents were reduced accordingly. Results from this experiment are presented, with particular emphasis on the regional and geographical changes in model surface temperature, precipitation and soil moisture. These results are compared with results from other studies. (Auth.)

40-254

Climatic prospects in the case of an extended, CO2-induced warming.

Flohn, H., Zeitschrift für Meteorologie, 1985, 35(1), p.1-14, With German summary. Refs. p.13-14.

Ice melting, Sea level, Carbon dioxide, Sea ice, Climatic changes, Glaciology.

If the expected CO2 induced global warming reaches a level of 4-5°C, two major climatic events are possible: a partial disintegration of the West-Antarctic ice sheet together with a sea level rise of 5-7 m and a disappearance of the perennal Arctic sea ice, together with a major displacement of the earth's climatic belts. Arguments are presented that the latter event should happen much earlier, due to the high sensitivity of the thin, broken Arctic sea ice. Combining selected model results, taking into account the coupled role of CO2 and H2O together with the greenhouse effect of other infrared-absorbing trace gases, the critical CO2 threshold for triggering both events is now estimated to be near 620 ppm with a possible error of 10-15%. Under natural conditions quite abrupt large-scale climatic shifts have occurred at the transition between Late Glacial and Holocene,

before the last glacial maximum and during earlier interglacials, with an amplitude of 50-60% of the glacial-interglacial difference and with a time-scale of less than 100 years. A possible feedback mechanism is proposed for such abrupt changes, when equatorial (and coastal) upwelling (downwelling) and their role for the CO<sub>2</sub> and H<sub>2</sub>O budget of the atmosphere are considered with their effects on the general atmospheric circulation. (Auth. mod.)

## 40-255

**Phytoplankton biomass near a receding ice-edge in the Ross Sea.**

Smith, W.O., Jr., et al, Antarctic nutrient cycles and food webs. SCAR Symposium on Antarctic Biology, 4th, Sep. 1983. Proceedings, edited by W.R. Siegfried, P.R. Condy, and R.M. Laws, Berlin, Springer-Verlag, 1985, p.70-77, 25 refs.

Nelson, D.M.

DLC QH84.2.S33 1983

**Ice edge, Plankton, Cryobiology, Chlorophylls, Antarctica—Ross Sea.**

During 2 cruises on the USCGC *Glacier* in January-February, 1983, chlorophyll distribution was measured in different areas of the Ross Sea. The primary study area was located off the coast of southern Victoria land in a region of receding pack-ice. 34 stations were occupied in a 100 x 300 km area of variable ice concentration. In comparison to control stations and previous data, chlorophyll levels were high, averaging 4.08 mg chl-a/cu m at the depth of the chlorophyll maximum in the water column, and 128.2 mg/sq m when integrated from the surface to 150 m. High surface chlorophyll levels appeared to be highly correlated with a stable surface layer at the edge of the receding ice-pack. At stations outside of the ice-edge bloom, stability at the surface was reduced and chlorophyll concentrations were markedly lower. Water column stability appeared to be a major factor in the initiation and maintenance of ice-edge phytoplankton blooms, and the roles of these blooms in the overall estimates of biogenic production and energy flux of the southern ocean need to be re-evaluated. (Auth. mod.)

## 40-256

**Influence of light on growth and development of the sea-ice microbial community of McMurdo Sound.**

Sullivan, C.W., et al, Antarctic nutrient cycles and food webs. SCAR Symposium on Antarctic Biology, 4th, Sep. 1983. Proceedings, edited by W.R. Siegfried, P.R. Condy, and R.M. Laws, Berlin, Springer-Verlag, 1985, p.78-83, 27 refs.

Palmisano, A.C., Kottmeier, S., McGrath Grossi, D., Moe, R.

DLC QH84.2.S33 1983

**Sea ice, Cryobiology, Microbiology, Bacteria, Light effects, Antarctica—McMurdo Sound.**

Growth and development of the sea-ice microbial community (SIMCO) in McMurdo Sound were assessed and evidence was obtained that light was a major limiting factor. A light perturbation experiment was set up on the annual sea-ice of McMurdo Sound near Cape Armitage during October-December 1981 in which 2 experimental quadrats of 100 sq m each were constructed. On 1 quadrat snow cover of 15-70 mm was maintained, while the adjacent quadrat received 0.7 m of snow to provide 2 different under-ice irradiances. Significant growth of ice algae occurred at irradiance of 0.2-2.9 microE/sq m/s. Estimates of *in situ* algal and bacterial growth rates indicated doubling times of 7 and 14 d, respectively. The growth of heterotrophic ice bacteria appeared to be coupled to growth of ice algae. At least 20 million kg new carbon per yr is contributed to McMurdo Sound by SIMCOs. It is concluded that ecosystem models of southern ocean food webs must consider not only total C input but also the dynamics of primary and secondary production derived from sea-ice microbial communities. (Auth.)

## 40-257

**Physiological response of micro-algae in the ice-platelet layer to low-light conditions.**

Palmisano, A.C., et al, Antarctic nutrient cycles and food webs. SCAR Symposium on Antarctic Biology, 4th, Sep. 1983. Proceedings, edited by W.R. Siegfried, P.R. Condy, and R.M. Laws, Berlin, Springer-Verlag, 1985, p.84-88, 39 refs.

Sullivan, C.W.

DLC QH84.2.S33 1983

**Sea ice, Microbiology, Algae, Cryobiology, Nutrient cycle, Antarctica—McMurdo Sound.**

In McMurdo Sound in 1982 a dense microalgal community was associated with the ice-platelet layer of annual sea-ice. Under-ice irradiance was about 6 microE/sq m/s, less than 0.4% of surface downwelling irradiance. Two aspects of ice algal physiology appear to be important to growth under these conditions of low light. First, ice algae were shade-adapted. Secondly, certain ice algae were found to take up 3H-serine at natural substratum concentrations under both dark and low light conditions. Since sea-ice micro-algae represent a significant fraction of primary production in some antarctic pack-ice regions, knowledge of their physiology is crucial to understanding carbon flux and nutrient cycling in antarctic marine ecosystems. (Auth.)

## 40-258

**Autumnal proliferation of ice-algae in antarctic sea-ice.**

Hoshiai, T., Antarctic nutrient cycles and food webs. SCAR Symposium on Antarctic Biology, 4th, Sep. 1983. Proceedings, edited by W.R. Siegfried, P.R. Condy, and R.M. Laws, Berlin, Springer-Verlag, 1985, p.89-92, 11 refs.

DLC QH84.2.S33 1983

**Algae, Cryobiology, Solar radiation, Seasonal variations, Antarctica—Kitano-setsu Strait.**

Results of plant pigment analyses, solar radiation measurements and observations of sea-ice growth in the autumn of 1982 showed that an increase of plant pigments occurred at the bottom of the sea-ice when the growth rate of the ice was low. A remarkable increase of ice-algae occurred in the autumn of 1970 when the growth rate of the sea-ice was extremely low; its thickness remaining at 0.3 m from late March until mid-April. New ice-fields are restricted in area, and the growth rate of sea-ice varies spatially and temporally. Hence, the autumnal enhancement of ice-algae is relatively limited. The growth rate of sea-ice is low in spring and summer, but the under-surface of the ice is stable for relatively long periods during which increases in solar radiation favor the proliferation of ice-algae in extensive areas of ice-covered sea. (Auth.)

## 40-259

**Decomposition and nutrient cycling in *Rostkovia magellanica* from two contrasting bogs on South Georgia.**

Lawson, G.J., Antarctic nutrient cycles and food webs. SCAR Symposium on Antarctic Biology, 4th, Sep. 1983. Proceedings, edited by W.R. Siegfried, P.R. Condy, and R.M. Laws, Berlin, Springer-Verlag, 1985, p.211-220, 23 refs.

DLC QH84.2.S33 1983

**Tundra, Vegetation patterns, Soil chemistry, Swamps, Decomposition, South Georgia.**

The chemical composition of *Rostkovia magellanica* tillers was contrasted between a eutrophic seepage slope-mire and a mesotrophic basin-bog. Tillers in the slope-mire have higher concentrations of Ca, K, N, and Fe but lower concentrations of Na, Mg, and Mn than those in the basin-bog. These differences generally reflect the higher levels of exchangeable nutrients and pH in peat from the seepage-slope. Five elements are removed from senescing leaves (in the order K > P > N > Na > Mg), whereas 3 are accumulated (Fe > Ca > Mn). At both sites, initially rapid loss of weight of litterbag content was halted over winter. Weight loss in the second summer was much faster on the seepage-slope. The content of mobile elements decreased considerably overall through leaching and decomposition, but N and P contents increased during the second summer at the slope and bog sites, respectively, and this may represent fungal activity. Litterbags composed of different age classes of leaves remained chemically distinct from each other (with the exception of K) during the 15-month trial. (Auth.)

## 40-260

**Growth and production of *Poa flabellata* in relation to nutrient status and exposure at South Georgia.**

Smith, R.L., Antarctic nutrient cycles and food webs. SCAR Symposium on Antarctic Biology, 4th, Sep. 1983. Proceedings, edited by W.R. Siegfried, P.R. Condy, and R.M. Laws, Berlin, Springer-Verlag, 1985, p.221-228, 19 refs.

DLC QH84.2.S33 1983

**Tundra, Vegetation patterns, Nutrient cycle, Grasses, Soil chemistry, South Georgia.**

Tall tussock grass, *Poa flabellata*, is the dominant and most widespread phanerogam on South Georgia. Development of tussock grasslands and luxuriance of individual plants are greatly enhanced in areas influenced by seals and seabirds. Such stands are easily distinguished from nonbiotically influenced ones by the large stature of the plants, because of increased annual productivity of aerial parts, and by the deep green color of the leaves resulting from increased chlorophyll content and chloroplast size, both factors being associated with nitrogen enrichment. The wide ecological amplitude of the grass in relation to edaphic, moisture and microclimate factors, its ability to tolerate high nutrient levels, deposition of wind-blown sea-spray and disturbance by seals, the high energy reserves, and its rapid growth, all contribute to its success in this harsh environment. The grass shows a preference, in terms of growth and productivity, for an organic soil with a high moisture content and nutrient status, factors which prevail in the biotically influenced coastal stands of dense luxuriant tussock grass. Tussock is capable of comparable growth and production in both sheltered and exposed habitats so long as nutrients and water are not limiting. (Auth.)

## 40-261

**Methanogenesis and the anaerobic micro-biology of a wet moss community at Signy Island.**

Yarrington, M.R., et al, Antarctic nutrient cycles and food webs. SCAR Symposium on Antarctic Biology, 4th, Sep. 1983. Proceedings, edited by W.R. Siegfried, P.R. Condy, and R.M. Laws, Berlin, Springer-Verlag, 1985, p.229-233, 11 refs.

Wynn-Williams, D.D.

DLC QH84.2.S33 1983

**Mosses, Microbiology, Gases, Peat, Antarctica—Signy Island.**

The biological production of methane is a terminal step in the mineralization of organic carbon by anaerobic microorganisms, requiring consistently low redox potentials (-330 mV), and the availability of a restricted range of low molecular weight C compounds as substrates. Thus, the methanogenesis measured *in situ* and in the laboratory peat slurry experiments, is a reliable indicator of anaerobic microbial metabolism. The moss-carpet exhibited redox potentials as low as -400 mV (corrected to pH 7.0) and released an average of 1.24 mg C/sq m/d as methane during the Antarctic summer of December 1981 to March 1982. Laboratory experiments on homogenized moss-peat samples maintained anaerobically, showed that methane production was influenced by environmental temperature and pH, and that under natural environmental conditions in the moss-carpet, the methanogens were probably metabolizing sub-optimally. Inconclusive results were obtained from experiments designed to test substrate specificity for methanogenesis; however, they suggested that methionine and formate could be at least partially metabolized with the formation of methane. (Auth.)

## 40-262

**Wind transport of electrostatically charged particles and minute organisms in Antarctica.**

Benninghoff, W.S., et al, Antarctic nutrient cycles and food webs. SCAR Symposium on Antarctic Biology, 4th, Sep. 1983. Proceedings, edited by W.R. Siegfried, P.R. Condy, and R.M. Laws, Berlin, Springer-Verlag, 1985, p.592-596, 16 refs.

Benninghoff, A.S.

DLC QH84.2.S33 1983

**Aerosols, Snow crystals, Blowing snow, Static electricity.**

In the polar regions, and especially on the antarctic continent, wind transport is enhanced by blown snow crystals and electric charges on the airborne particles. At several sites in Antarctica in 1977, pairs of Tauber sedimentation traps, grounded and not grounded, were exposed, under different weather conditions and attendant electric potential gradients within 2 m of the ground. Relationships inferred from observation of the deposition of snow and dust particles in the grounded and ungrounded Tauber traps are reported. These relationships suggest that melting snow-banks in contact with moist or wet soil or bedrock will tend to accumulate airborne dust faster than melting snow overlying ice or frozen ground. Sea-ice, accreting from the underside, tends to incorporate sessile plankton, and, as the upper surface sublimates, the plankton residues may be dehydrated, lofted, charged, and transported by wind. Similarly, bursting bubbles on water surfaces inject micro-biota into the atmosphere as charged particles which probably have potential for long distance travel in the presence of snow being blown over ice surfaces. These and other examples of wind transport of charged particles are described and evaluated for their significance in Antarctic biogeography. (Auth.)

## 40-263

**Interaction of soil and lake microflora at Signy Island.**

Flis-Evans, J.C., et al, Antarctic nutrient cycles and food webs. SCAR Symposium on Antarctic Biology, 4th, Sep. 1983. Proceedings, edited by W.R. Siegfried, P.R. Condy, and R.M. Laws, Berlin, Springer-Verlag, 1985, p.662-668, 21 refs.

Wynn-Williams, D.D.

DLC QH84.2.S33 1983

**Lake ice, Bacteria, Soil chemistry, Ground thawing, Meltwater, Signy Island.**

Lakes on Signy are small and, during the summer ice-free period, receive a substantial influx of run-off from the surrounding catchment, greatly in excess of their total volume. Within the various habitats comprising each lake's catchment area, large populations of bacteria, yeasts and fungi exist. Numerical profiles demonstrate that the composition of lake populations differs between lakes, and between lakes and their catchment populations. Temperature-specific growth rate characteristics indicate that successful freshwater bacteria can be considered psychrophiles, whereas successful terrestrial bacteria are more psychrotolerant. Substrate affinity values indicate that freshwater bacteria are more efficient than terrestrial bacteria or yeasts in utilizing low concentrations of dissolved organic C at low temperatures. It is proposed that the two populations may be considered as a mixed-culture chemostat population. At high nutrient concentrations, a typical terrestrial population will exist and with fluctuations in temperature and nutrient level, a typical succession will also occur. But when nutrient levels drop suddenly for an extended period and temperature stabilizes at about 0°C, a typical freshwater population emerges whose components had previously existed only in very low numbers. (Auth. mod.)

## 40-264

**All-Union Conference of the Arctic and Antarctic Scientific Research Institute on Ice Forecasting and Calculations, Leningrad, Oct. 24-26, 1984. Abstracts. (Tezisy dokladov).**

Vsesoyuznoe soveshchanie Arkkticheskogo i antarkkticheskogo nauchno-issledovatel'skogo instituta po ledovym prognozam i raschetam, Leningrad, Oct. 24-26, 1984, Leningrad, 1984, 49p. In Russian, with English table of contents enclosed.

Oksenova, E.I., ed.

Estuaries, Ice navigation, Ice surveys, Icebreakers, Ice forecasting, Spaceborne photography, Long range forecasting, Sea ice distribution, Ice edge, Ships, Mathematical models, River ice.

- 40-265**  
**Proceedings, Vols. 1 and 2.**  
International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, 1063p., Refs. passim. For selected papers see 40-266 through 40-344. **Ice loads, Ice navigation, Offshore structures, Ice physics, Ice mechanics, Ice pressure, Offshore drilling, Sea ice distribution, Meetings.**
- 40-266**  
**Past environmental changes in the North-Atlantic region.**  
Dansgaard, W., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.31-40, 26 refs.**  
**Ice sheets, Ice cores, Climatic changes, Ice dating, Snow cover, Profiles, Drill core analysis, Isotope analysis, Paleoclimatology, Ice composition, Temperature variations, Greenland.**
- 40-267**  
**Brash ice shear properties—laboratory tests.**  
Fransson, L., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.75-87, 7 refs.**  
**Sandkvist, J.**  
**Ice physics, Shear properties, Ice navigation, Offshore structures, Ice loads, Ice solid interface, Ice mechanics, Ice pressure, Cohesion, Brash ice.**
- 40-268**  
**Kadluk ice stress measurement program.**  
Johnson, J.B., et al, MP 1899, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.88-100, 9 refs.**  
**Cox, G.F.N., Tucker, W.B.**  
**Ice sheets, Stresses, Ice loads, Offshore structures, Ice conditions, Ice pressure, Thermal expansion.**  
Cylindrical biaxial stress sensors were used to measure ice stress variations as a function of depth across an ice peninsula on the shoreward side (south) of Kadluk Island. The stresses varied in a complex manner both laterally and with depth in the ice sheet. Average stresses were calculated and summed across the ice peninsula to determine the ice load acting on the structure. The maximum measured average stress and corresponding calculated structural load during the experiment were about 300 kPa and 150 MN respectively. All significant measured stresses were caused by thermal expansion of the ice sheet.
- 40-269**  
**Ice island fragment in Stefansson Sound, Alaska.**  
Kovacs, A., MP 1900, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.101-115, 9 refs.**  
**Ice islands, Ice strength, Ice physics, Grounded ice, Calving, Ice cover thickness, Ice salinity, Ice density, Ice temperature, Statistical analysis.**  
A small ice island fragment was found in a unique location southwest of Cross Island, Alaska, in April 1983. Investigations were made to determine the thickness, salinity, density, internal temperature, and strength of the ice island. Measurements were also made which revealed that the ice island was grounded. Side scan sonar, depth profiles and direct sounding measurements of the sea bottom revealed that the ice island had gouged into the seabed when it was driven into shallower waters. Implications of this ice feature to offshore petroleum development are discussed.
- 40-270**  
**Apparent unconfined compressive strength of multi-year sea ice.**  
Kovacs, A., MP 1901, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.116-127, 4 refs.**  
**Ice strength, Sea ice, Ice loads, Compressive properties, Ice temperature, Ice density, Brines, Tests.**  
An axial double-ball load test system for determining the apparent unconfined compressive strength of multi-year sea ice was evaluated. The effects of loading ball size, ice temperature, and brine free density on the apparent unconfined compressive strength of the ice were investigated. Axial double-ball load test results are compared with those obtained from labor intensive conventional unconfined compression tests made on similar density ice. The results from the two testing methods were found to agree very well, indicating that the axial double-ball load test may be used to provide a rapid method for determining an apparent unconfined compressive strength index for ice.
- 40-271**  
**Fracture toughness of fresh water prototype ice and carbamide model ice.**  
Parsons, B.L., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.128-137, 14 refs.**  
**Snellen, J.B.**  
**Ice cracks, Loads (forces), Ice models, Ice solid interface, Ice cover thickness, Flexural strength, Grain size, Crack propagation.**
- 40-272**  
**Creep analysis of ice forces by the finite element method.**  
Pulkkinen, E.A., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.138-150, 9 refs.**  
**Ice creep, Ice loads, Ice solid interface, Ice cover thickness, Structures, Stress strain diagrams, Ice pressure, Ice cracks, Grain size.**
- 40-273**  
**Investigation of the electromagnetic properties of multi-year sea ice.**  
Morey, R.M., et al, MP 1902, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.151-167, 11 refs.**  
**Kovacs, A.**  
**Ice electrical properties, Electromagnetic properties, Sea ice, Ice cover thickness, Ice bottom surface, Remote sensing, Profiles, Ice detection, Ice structure, Ice models, Brines, Radar echoes.**  
Sounding of multi-year sea ice, using impulse radar operating in the 80- to 500-MHz frequency band, revealed that the bottom of this ice could not always be detected. This paper discusses the results of a field program aimed at finding out why the bottom of thick multi-year sea ice could not be profiled and at determining the electromagnetic (EM) properties of multi-year sea ice. It was found that the bottom of the ice could not be detected when the ice structure had a high brine content. Because of brine's high conductivity, its volume dominates the loss mechanism in first-year sea ice, and the same was found true for multi-year sea ice. A two-phase dielectric mixing formula, used by the authors for describing the EM properties of first-year sea ice, was modified to include the effects of the gas pockets found in the multi-year sea ice. This three-phase mixture model was found to estimate the EM properties of the multi-year ice studied over the frequency band of interest. The latter values were determined by 1) vertical sounding to a sub-surface target of known depth and 2) cross-borehole transmission measurements.
- 40-274**  
**Use of subgrains as paleostress indicators in first year sea ice.**  
Stander, E., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.168-176, 6 refs.**  
**Ice pressure, Shear modulus, Stresses, Ice creep, Ice microstructure, Sea ice, Grain size, Temperature effects.**
- 40-275**  
**Physical properties of sea ice in the Greenland Sea.**  
Tucker, W.B., et al, MP 1903, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.177-188, 9 refs.**  
**Gow, A.J., Weeks, W.F.**  
**Ice physics, Sea ice, Pack ice, Ice salinity, Ice temperature, Ice cover thickness, Ice crystal structure, Snow depth, Greenland Sea.**  
The physical properties of sea ice in the Fram Strait region of the Greenland Sea were examined during June and July 1984 in conjunction with the MIZEX field program. The properties of the pack ice in the Fram Strait are believed to be representative of ice from many locations within the Arctic Basin since Fram Strait is the major ice outflow region for the Basin. Most of the ice observed and sampled was multi-year. The majority of the first-year ice appeared to have been deformed prior to entering Fram Strait. The properties measured at each sampling site included salinity, temperature, thickness, crystal structure and snow depth. The measured salinities agreed well with those taken during summer at other locations in the Arctic. An important finding was that snow depths on multi-year ice were much larger than those on first-year ice. Finally, the crystal texture analysis indicated that about 75% of the ice consisted of congelation ice with typically columnar type crystal structure. The remaining 25% consisted of granular ice.
- 40-276**  
**Preliminary study on short-range numerical sea ice forecast in the Liaodongwan Bay.**  
Wang, R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.189-194, 2 refs.**  
**Liu, X., Zhang, L.**  
**Ice forecasting, Sea ice distribution, Ice conditions, Ice flocs, Wind velocity, Ice edge, Drift, China—Liaodongwan Bay.**
- 40-277**  
**Model test and analytical simulation on fracture mechanism of ice.**  
Yamashita, M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.195-204, 9 refs.**  
**Ice cracks, Ice models, Ice pressure, Ice loads, Cracking (fracturing), Ice flocs, Strains, Tests.**
- 40-278**  
**Random ice trajectories in the Greenland Sea.**  
Colony, R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.220-229, 8 refs.**  
**Moritz, R.E., Symonds, G.**  
**Ice mechanics, Drift, Ice flocs, Sea ice, Ice edge, Wind, Ocean currents, Velocity, Models, Ice conditions, Greenland Sea.**
- 40-279**  
**Ice forecast modelling in the East Greenland current.**  
Larsen, J., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.230-240, 8 refs.**  
**Kej, A.**  
**Ice forecasting, Ice models, Ocean currents, Geophysical surveys, Analysis (mathematics), Computer applications.**
- 40-280**  
**Probability analysis of design ice thickness in the Bohai Gulf.**  
Li, F., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.241-248, 3 refs.**  
**Xu, J., Deng, S., Li, T.**  
**Ice cover thickness, Ice loads, Sea ice distribution, Offshore structures, Design, Ice forecasting, China—Bohai Gulf.**
- 40-281**  
**Choice of reference frame for modelling pack ice motion.**  
McKenna, R.F., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.249-260, 4 refs.**  
**Sykes, J.F., Venkatesh, S., Neralia, V.R.**  
**Ice mechanics, Pack ice, Ice flocs, Ice conditions, Mathematical models, Beaufort Sea.**
- 40-282**  
**Element of ice dynamics in the Arctic ice pack.**  
Michel, B., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.261-269, 20 refs.**  
**Ice mechanics, Pack ice, Ice pressure, Ice loads, Drift, Pressure ridges, Ice override, Ice breaking.**
- 40-283**  
**Buoyancy driven circulation caused by sea ice growth.**  
Möller, J.S., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. **Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.270-282, 22 refs.**  
**Ice growth, Sea ice, Ocean currents, Buoyancy, Models, Velocity.**

- 40-284**  
Winter ice experiment Beaufort Sea (WIEBS)—collection and archival of data.  
Neralla, V.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.283-292, 5 refs.  
Venkatesh, S.  
Ice surveys, Ice mechanics, Ice models, Remote sensing, Sea ice distribution, Thermodynamics, Meteorological data, Oceanography, Beaufort Sea.
- 40-285**  
Ice features and movement north of Ellesmere Island, Canada.  
Nordlund, O.P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.293-304.  
Sackinger, W.M., Yan, M.  
Ice mechanics, Drift, Sea ice, Ice floes, Wind velocity, Wind direction, Air temperature, Pressure, Ice surveys, Ice cracks, Fast ice, Pressure ridges.
- 40-286**  
Comparison of the effects of natural meteorological conditions and artificial islands on regional ice conditions in the Beaufort Sea.  
Spedding, L.G., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.305-315, 6 refs.  
Hawkins, J.R.  
Ice conditions, Sea ice distribution, Artificial islands, Meteorological factors, Pressure ridges, Ice growth, Ice breaking, Fast ice, Beaufort Sea.
- 40-287**  
Wave statistics for offshore operations.  
Vik, I., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.316-325, 7 refs.  
Kleiven, G.  
Ocean waves, Offshore structures, Storms, Statistical analysis, Seasonal variations, Analysis (mathematical).
- 40-288**  
Directional wave spectra measured near ice edges.  
Wadhams, P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.326-338, 11 refs.  
Squire, V.A., Ewing, J.A., Pascal, R.W.  
Ocean waves, Ice edge, Ice floes, Spectra, Offshore structures, Pack ice, Wave propagation, Attenuation.
- 40-289**  
Dimensional statistics for sea-ice ridges.  
Wheeler, J.D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.339-348, 17 refs.  
Wang, A.T.  
Pressure ridges, Sea ice distribution, Offshore structures, Remote sensing, Statistical analysis.
- 40-290**  
Conditions and design criteria of sea ice in the Bohai Gulf.  
Xu, J., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.349-357, 8 refs.  
Li, T., Deng, S., Li, F.  
Ice conditions, Sea ice distribution, Offshore structures, Ice strength, Ice solid interface, Design criteria, Ice cover thickness, Compressive properties, China—Bohai Gulf.
- 40-291**  
Geotechnical properties of sediments of the West Greenland continental shelf, Davis Strait.  
Bryant, W.R., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.361-374, 3 refs.  
Bottom sediment, Ocean bottom, Geological surveys, Ice scoring, Gravel, Sands, Mud, Icebergs, Grain size, Davis Strait.
- 40-292**  
Comparison of Alaskan and Canadian Beaufort Sea ice scour data and methodologies.  
Morrison, T.B., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.375-387, 15 refs.  
Marcellus, R.W.  
Ice scoring, Ice mechanics, Impact strength, Distribution, Mapping, Beaufort Sea.
- 40-293**  
Northern latitude scientific ocean drilling.  
Taylor, E., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.388-392, 3 refs.  
Bryant, W.R.  
Offshore drilling, Coring, Iceberg towing.
- 40-294**  
Numerical simulation of ice gouge formation and infilling on the shelf of the Beaufort Sea.  
Weeks, W.F., et al, MP 1904, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.393-407, 12 refs.  
Tucker, W.B., Niedoroda, A.W.  
Ice scoring, Bottom topography, Bottom sediment, Ocean bottom, Sediment transport, Models, Distribution, Computer applications, Beaufort Sea.  
A simulation model for sea ice-induced gouges on the shelf of the Beaufort Sea is developed by assuming that annual occurrence of new gouges is given by a Poisson distribution, locations of the gouges are random, and distribution of gouge depths is specified by an exponential distribution. Once a gouge is formed it is subject to infilling by transport of sediment into the region and by local movement of sediment along the sea floor. These processes are modeled by assuming a sediment input based on stratigraphic considerations and by calculating bed-load transport using methods from sediment transport theory. It is found that if currents are sufficient to transport sediment, rapid infilling of gouges occurs.
- 40-295**  
Sea ice gouge statistics.  
Wheeler, J.D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.408-410, 0 refs.  
Wang, A.T.  
Ice scoring, Bottom topography, Ocean bottom, Pipelines, Bottom sediment, Sea ice, Underground pipelines.
- 40-296**  
Iceberg scouring frequencies and scour degradation on Canada's eastern shelf areas using sidescan mosaic remapping techniques.  
Woodworth-Lynas, C.M.T., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.419-442, 34 refs.  
Barrie, J.V.  
Ice scoring, Icebergs, Bottom topography, Marine geology, Offshore drilling, Drift, Mapping, Acoustic measurement, Degradation.
- 40-297**  
On the ultimate strength of composite steel-concrete structure.  
Hattori, Y., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.445-454, 2 refs.  
Offshore structures, Reinforced concretes, Ice loads, Freeze thaw cycles, Tests, Models, Countermeasures, Elastic properties, Plastic properties, Thermal effects.
- 40-298**  
Behaviour of concrete at arctic temperatures.  
Marshall, A.L., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.455-467, 6 refs.  
Concrete freezing, Concrete durability, Low temperature research, Water content, Thermal effects, Concrete strength, Dynamic loads.
- 40-299**  
Generalized approach to the structure-soil interaction analysis with time and temperature effects.  
Vinogradov, A.M., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.468-477, 12 refs.  
Permafrost, Foundations, Bearing strength, Ground ice, Rheology, Viscoelasticity, Frozen ground mechanics, Soil creep, Relaxation (mechanics), Temperature effects, Forecasting.
- 40-300**  
Examples of quay structures in Greenland placed on steeply inclined rock surface and subjected to ice forces.  
Hulgaard, E., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.481-489.  
Wharves, Ice loads, Ice pressure, Sea ice, Bearing strength, Slope orientation, Rocks, Design, Ice conditions, Tides, Greenland.
- 40-301**  
Mooring system for cutters in Arsuk, Greenland.  
Nondal, N., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.1, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.490-499.  
Moorings, Ice mechanics, Drift, Ocean bottom, Offshore structures, Bottom topography, Countermeasures, Greenland.
- 40-302**  
Detachable systems—alternative approach for Arctic exploratory structures.  
Buslov, V.M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.519-528, 6 refs.  
Rojansky, M.  
Offshore structures, Ice loads, Safety, Design, Platforms.
- 40-303**  
Review of experimental studies of uplifting forces exerted by adfrozen ice on marina piles.  
Christensen, F.T., et al, MP 1905, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.529-542, 30 refs.  
Zabilansky, L.J.  
Pile extraction, Ice adhesion, Water level, Shear properties, Flexural strength, Ice cover effect, Ice solid interface, Ice loads, Ice physics, Construction materials.  
Over the last decade the problem of pile jacking has been studied experimentally, both in the field and in laboratory studies. This paper reviews the findings of these studies and suggests subjects for further research.
- 40-304**  
Response of semi-submersible models to bergy-bit impact.  
El-Tahan, H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.544-554, 5 refs.  
Swamidass, A.S.J., Arockiasamy, M.  
Offshore structures, Ice loads, Impact strength, Icebergs, Ice floes, Hydraulic structures, Calissons, Moorings, Cost analysis, Models, Experimentation.
- 40-305**  
Field indentation tests on cylindrical structures.  
Inoue, M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.555-568, 7 refs.  
Koma, N.  
Offshore structures, Ice loads, Ice pressure, Countermeasures, Sea ice distribution, Ice cover thickness, Compressive properties, Strains, Tests, Ice temperature, Ice salinity.

40-306

**Ice impact structural design loads.**

Johnson, R.C., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.569-578, 4 refs.

Nevel, D.E.

**Offshore structures, Ice loads, Impact strength, Ice strength, Icebergs, Mathematical models, Design criteria, Velocity.**

40-307

**Methods for determining ice impact loads against offshore structures.**

Krankkala, T., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.579-588, 8 refs.

**Ice loads, Offshore structures, Impact strength, Ice mechanics, Icebergs, Ice floes, Strains, Ice temperature.**

40-308

**Modelling of ice impact on concrete shells.**

Rao, G., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.589-602, 4 refs.

Reddy, D.V.

**Ice loads, Offshore structures, Impact strength, Ice pressure, Reinforced concretes, Cracking (fracturing), Tensile properties, Flexural strength, Models, Time factor.**

40-309

**Transfer of ice stress to a cylindrical offshore structure.**

Sackinger, W.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.603-620, 7 refs.

Kajaste-Rudnitski, J., Juppunen, P.

**Ice pressure, Offshore structures, Ice mechanics, Stresses, Ice loads, Compressive properties, Analysis (mathematics).**

40-310

**Extrapolation of multi-year ice impact data.**

Sanderson, T.J.O., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.621-630, 10 refs.

Westermann, P.H., Simpson, J.

**Ice pressure, Ice floes, Ice loads, Impact strength, Offshore landforms, Dynamic loads, Drift, Offshore structures, Ice creep.**

40-311

**Offshore drilling and production platforms with rapid removal and redeployment capability.**

Sebastiani, G., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.631-642, 6 refs.

Fontolan, M.

**Offshore structures, Icebergs, Ice conditions, Ice scoring, Offshore drilling, Design, Countermeasures, Platforms.**

40-312

**Sheet ice forces on a conical structure: an experimental study.**

Sodhi, D.S., et al, MP 1906, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.643-655, 11 refs.

Morris, C.E., Cox, G.F.N.

**Ice pressure, Ice sheets, Offshore structures, Ice loads, Flexural strength, Surface properties, Ice loads, Friction, Experimentation.**

Small-scale experiments were performed to determine sheet ice forces on a conical structure. The experiments were conducted with a 45 deg upward-breaking conical structure which had diameters of 1.5 m at the waterline and 0.33 m at the top. The surface of the structure was initially smooth, later it was roughened to investigate the effect of surface friction on the ice load. The thickness and the flexural strength of ice sheets were varied, and the tests were conducted at three fixed velocities.

40-313

**Ductile to brittle transition in sea ice under uniaxial loading.**

Sunder, S.S., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.656-666, 14 refs.

Ting, S.-K.

**Ice loads, Stress strain diagrams, Sea ice, Offshore structures, Ice deformation, Tensile properties, Brittleness, Models, Stress concentration.**

40-314

**Method of calculating the global ice load on Esso's caisson retained island at Kadluk.**

To, N.M., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.667-676, 4 refs.

**Ice loads, Caissons, Artificial islands, Ice pressure, Safety, Offshore structures, Beaufort Sea.**

40-315

**Dynamic response of moored conical structures to a moving ice sheet.**

Toyama, Y., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.677-688, 2 refs.

Yashima, N.

**Ice loads, Offshore structures, Dynamic loads, Ice mechanics, Ice solid interface, Moorings, Buoyancy, Wind factors, Ocean currents.**

40-316

**Strain-softening model for simulating local ice contact behaviour.**

Vivatrat, V., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.689-698, 7 refs.

Chen, V.L.

**Ice pressure, Impact strength, Ice solid interface, Strains, Stresses, Velocity.**

40-317

**Steel submersible drilling platform for the Bohal Gulf.**

Wang, Q., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.699-705, 4 refs.

Zhao, Y.

**Ice loads, Offshore structures, Steel structures, Ice conditions, Offshore drilling, Design, Ice cover thickness, Ice strength.**

40-318

**Systematic approach for the engineering design of small-craft harbours and structures for ice conditions.**

Wortley, C.A., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.706-715, 1 ref.

**Ice loads, Ports, Docks, Ice pressure, Soil strength, Ice prevention, Design criteria, Ice control, Bubbling, Foundations, Floating structures.**

40-319

**Model tests of ice rubble field around a gravel island.**

Yoshimura, N., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.716-726, 8 refs.

Inoue, M.

**Ice models, Artificial islands, Ice loads, Gravel, Ice solid interface, Ice pileup, Ice override.**

40-320

**Conventional submarine technology for under-ice operation.**

Chappuis, J., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.729-754, 9 refs.

Abels, F.

**Submarines, Subglacial navigation, Ice navigation, Military operation, Design, Logistics.**

40-321

**Improved detection of icebergs using a dual-polarized marine radar.**

Currie, B.W., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.757-766, 3 refs.

Lewis, E.O.

**Ice detection, Icebergs, Ice conditions, Radar echoes, Ships, Offshore drilling.**

40-322

**Technical and economic aspects of navigation in cold regions as experienced by the Royal Greenland Trade Department through 200 years.**

Duysen, N., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.767-777, 2 refs.

Edge, P.E.

**Ice navigation, Marine transportation, Sea ice distribution, History, Seasonal variations, Icebergs, Design.**

40-323

**M.V. Robert Lemeur ice-propeller interaction project: instrumentation.**

Edgecombe, M.H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.778-786, 2 refs.

Spencer, P.A., Bayly, I.M.

**Ice navigation, Propellers, Ice breaking, Icebreakers, Tests, Computer applications.**

40-324

**Influence of ice-rubble size on resistance to ship-hull motion.**

Ettema, R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.787-796, 5 refs.

Matsuishi, M., Kitazawa, T.

**Ice conditions, Ice navigation, Ice structure, Floating ice, Velocity, Ice strength.**

40-325

**Numerical predictions of ice build-up in ships tracks.**

Hamza, H., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.797-810, 10 refs.

**Ice navigation, Ice conditions, Ice forecasting, Ships, Floating ice, Velocity, Mathematical models, Climatic factors.**

40-326

**Full scale ice performance tests of sisterships with a ducted and an open propeller.**

Korri, P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.811-822.

Koskinen, P., Nymann, T.

**Ice navigation, Ice conditions, Ice loads, Ships, Propellers, Ice cover thickness, Ice temperature, Ice salinity, Compressive properties, Ice strength, Impact strength.**

40-327

**On the statistical nature of the ice-induced pressures measured on board I.B. Sisu.**

Kujala, P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.823-837, 11 refs.

Vuorio, J.

**Ice navigation, Ice pressure, Ships, Ice mechanics, Ice conditions, Ice solid interface, Statistical analysis.**

40-328

**Shipboard ice navigation system.**

Lowry, R.T., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.838-847, 5 refs.

McAvoy, J.G., Sneyd, A.R.

**Ice navigation, Remote sensing, Ice conditions, Ice forecasting, Meteorological data, Radar photography.**

## 40-329

**Evolution and potential of the arctic submarine.**  
McLaren, A.S., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.848-857, 27 refs.  
**Submarines, Ice navigation, Subglacial navigation, History.**

## 40-330

**Study on 100,000 DWT ice-breaking tanker.**  
Motozuna, K., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.861-872, 4 refs.  
**Tanker ships, Ice breaking, Icebreakers, Ice conditions, Tests, Crude oil.**

## 40-331

**Hull girder bending forces due to ramming icebreaking.**  
Tunik, A.L., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.873-881, 7 refs.  
**Ice navigation, Ships, Ice breaking, Ice solid interface, Analysis (mathematics), Damage.**

## 40-332

**Ship with auxiliary icebreaking rotary bow.**  
Vinogradov, O.G., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.882-891, 9 refs.  
**Icebreakers, Ice breaking, Ice navigation, Ice solid interface, Analysis (mathematics), Ice friction.**

## 40-333

**Detection of oil under ice using electromagnetic radiation.**  
Goodman, R.H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.895-902, 7 refs.  
Dean, A.M., Fingas, M.F.  
**Oil spills, Ice bottom surface, Electromagnetic prospecting, Subglacial observations, Detection, Radar echoes.**

## 40-334

**Detection of oil under ice using acoustics.**  
Goodman, R.H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.903-916, 21 refs.  
Jones, H.W., Fingas, M.F.  
**Oil spills, Ice bottom surface, Acoustic measurement, Detection, Ice acoustics, Attenuation, Wave propagation.**

## 40-335

**Arctic hydro-climatic measurements and database—associate to the hydro-power investigations in Greenland.**  
Andersen, A.W., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.919-934.  
Thomsen, T.  
**Hydrology, Climatology, Meteorological data, Weather stations, Electric power, Greenland.**

## 40-336

**Glacier investigations in connection with future hydro-power exploitation in Greenland.**  
Weidick, A., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.935-944, 7 refs.  
**Glacier surveys, Electric power, Glacier melting, Glacier ablation, Glacier mass balance, Meltwater, Ice edge, Glacier oscillation, Greenland.**

## 40-337

**Wave measurements in the Barents Sea: practical experiences and preliminary results.**  
Barstow, S.F., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.947-965, 6 refs.  
Lygre, A.  
**Ocean waves, Ice edge, Sea ice distribution, Marine meteorology, Icing, Measuring instruments, Barents Sea.**

## 40-338

**Dynamic analysis of unstable roll of icebergs.**  
Bass, D.W., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.966-979, 6 refs.  
Peters, G.R.  
**Icebergs, Drift, Ice mechanics, Ocean waves, Wave propagation, Calving, Dynamic properties, Stability, Wind factors.**

## 40-339

**Analogies waves and ice on sloping structures.**  
Bruun, E., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.982-987, 12 refs.  
Bruun, P.  
**Offshore structures, Ice loads, Ocean waves, Ice physics, Water, Slope orientation, Pressure ridges, Ice override, Ice pileup.**

## 40-340

**Measurement of instantaneous motions of ice masses at sea: 1984 pilot program.**  
Lever, J.H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.988-997, 10 refs.  
Diemand, D.  
**Ice mechanics, Sea ice, Drift, Ice floes, Icebergs, Ocean waves, Measuring instruments.**

## 40-341

**Combination of warm water outlets and air bubbler curtains for ice-reducing purposes—full scale tests.**  
Mäkitalo, L.I., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.998-1008, 3 refs.  
Sandkvist, J.  
**Ice navigation, Bubbling, Water temperature, Ice control, Ports, Docks, Channels (waterways), Tests.**

## 40-342

**Ice island generation and trajectories north of Ellesmere Island, Canada.**  
Sackinger, W.M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.1009-1040, 38 refs.  
**Ice islands, Ice shelves, Ice strength, Floating ice, Icebergs, Offshore drilling, Wind direction, Wind velocity, Stresses, Ice salinity.**

## 40-343

**On deflections and strains induced by loads moving over ice.**  
Squire, V.A., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.1041-1050, 12 refs.  
**Ice cover strength, Vehicles, Ice deformation, Strains, Floating ice, Dynamic loads, Theories, Velocity.**

## 40-344

**Mapping of snowcover using satellite imagery.**  
Thomsen, A., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.2, Hørsholm, Denmark, Danish Hydraulic Institute, 1985, p.1051-1063, 2 refs.  
**Snow cover distribution, Remote sensing, Mapping, Reflection, Albedo, Topographic effects.**

## 40-345

**Adaptation of woody plants to extreme environmental conditions.** [Adaptatsiia drevesnykh rastenii k ekstremal'nym usloviyam sredy].  
Volkov, A.D., ed, Petrozavodsk, 1984, 128p., In Russian. For selected papers see 40-346 through 40-353. Refs. passim.  
Ermakov, V.I., ed, Shcherbakova, M.A., ed.  
**Introduced plants, Plant ecology, Plant physiology, Cryogenic soils, Roots, Photosynthesis, Permafrost distribution, Permafrost depth, Human factors, Pollution, Environmental protection.**

## 40-346

**Adaptations for protecting the ontogenesis of woody plants.** [Adaptatsii po zashchite ontogeneza drevesnykh rastenii].  
Kulagin, I.U., Adaptatsiia drevesnykh rastenii k ekstremal'nym usloviyam sredy (Adaptation of woody plants to extreme environmental conditions) edited by A.D. Volkov, V.I. Ermakov and M.A. Shcherbakova, Petrozavodsk, 1984, p.4-20, In Russian. 8 refs.  
**Introduced plants, Acclimatization, Cryogenic soils, Polar regions, Plant ecology, Plant physiology, Alpine landscapes, Roots, Photosynthesis, Nutrient cycles, Economic development.**

## 40-347

**Multilevel adaptational processes in living nature.** [Ob icarkhii adaptatsionnykh protsessov v zhivoi prirode].  
Volkov, A.D., Adaptatsiia drevesnykh rastenii k ekstremal'nym usloviyam sredy (Adaptation of woody plants to extreme environmental conditions) edited by A.D. Volkov, V.I. Ermakov and M.A. Shcherbakova, Petrozavodsk, 1984, p.20-25, In Russian. 6 refs.  
**Plant ecology, Introduced plants, Acclimatization, Plant physiology, Cryogenic soils, Permafrost depth, Active layer.**

## 40-348

**Microevolutionary processes in common pine.** [Mikroevoliutsionnye protsessy v populatsiakh sosny obyknovennoi].  
Pravdin, L.F., et al, Adaptatsiia drevesnykh rastenii k ekstremal'nym usloviyam sredy (Adaptation of woody plants to extreme environmental conditions) edited by A.D. Volkov, V.I. Ermakov and M.A. Shcherbakova, Petrozavodsk, 1984, p.26-42, In Russian. 18 refs.  
Dukharev, V.A.  
**Swamps, Acclimatization, Forest land, Trees (plants), Plant ecology, Plant physiology, Nutrient cycle, Soil chemistry, Soil water migration, Conifers.**

## 40-349

**Physiological and biochemical mechanisms of plant adaptation to extreme environmental conditions.** [Fiziologo-biokhimicheskie mekhanizmy adaptatsii khvoynykh rastenii k ekstremal'nym faktorom sredy].  
Novitskaia, I.U.E., Adaptatsiia drevesnykh rastenii k ekstremal'nym usloviyam sredy (Adaptation of woody plants to extreme environmental conditions) edited by A.D. Volkov, V.I. Ermakov and M.A. Shcherbakova, Petrozavodsk, 1984, p.42-52, In Russian. 23 refs.  
**Introduced plants, Acclimatization, Photosynthesis, Nutrient cycle, Soil temperature, Plant ecology, Soil chemistry, Plant physiology.**

## 40-350

**Rhythmic and parametric aspects of plant adaptation to specific environmental conditions.** [Ritmologicheskie i parametricheskie aspekty adaptatsii rastenii k konkretnym usloviyam sredy].  
Kaibialnen, L.K., Adaptatsiia drevesnykh rastenii k ekstremal'nym usloviyam sredy (Adaptation of woody plants to extreme environmental conditions) edited by A.D. Volkov, V.I. Ermakov and M.A. Shcherbakova, Petrozavodsk, 1984, p.53-65, In Russian. 35 refs.  
**Introduced plants, Acclimatization, Plant ecology, Plant physiology, Transpiration, Photosynthesis, Soil temperature, Solar radiation.**

## 40-351

**Ecologic-genetic adaptation of spruce to northern conditions.** [Ekologiko-geneticheskie adaptatsii eli v usloviakh Severa].  
Shcherbakov, N.M., et al, Adaptatsiia drevesnykh rastenii k ekstremal'nym usloviyam sredy (Adaptation of woody plants to extreme environmental conditions) edited by A.D. Volkov, V.I. Ermakov and M.A. Shcherbakova, Petrozavodsk, 1984, p.78-89, In Russian. 18 refs.  
Shcherbakova, M.A.  
**Taiga, Forest tundra, Trees (plants), Acclimatization, Introduced plants, Cryogenic soils, Soil temperature, Soil water migration, Plant physiology.**

40-352

**Plant resistance to industrial emissions.** (Priroda uslozhivostei rastenii k promyshlennym ckgalatam), Tarabrin, V.P., Adaptatsiia drevesnykh rastenii k ekstremal'nym usloviyam sredy (Adaptation of woody plants to extreme environmental conditions) edited by A.D. Volkov, V.I. Ermakov and M.A. Shcherbakova, Petrozavodsk, 1984, p.90-97, In Russian. 31 refs.

40-353

**Specific structures of root systems of woody plants growing in the Far Northern mountains.** (Osobennosti stroeniia kornevykh sistem drevesnykh porod v gorakh Krainego Severa), Iarmishko, V.T., et al, Adaptatsiia drevesnykh rastenii k ekstremal'nym usloviyam sredy (Adaptation of woody plants to extreme environmental conditions) edited by A.D. Volkov, V.I. Ermakov and M.A. Shcherbakova, Petrozavodsk, 1984, p.100-117, In Russian. 21 refs.

**Roots, Plant ecology, Plant physiology, Trees (plants), Polar regions, Permafrost depth, Soil temperature, Alpine landscapes, Snow cover effect, Slope processes, Rock streams, USSR—Putorana Plateau.**

40-354

**Verdict on Erebus.** Mahon, P., Christchurch, New Zealand, Collins, 1984, 296p.

DLC TL553.5.M28 1984

**Airplanes, Navigation, Whiteout.**

The author was appointed by the New Zealand government to be a Royal Commissioner of Inquiry to investigate the crash of an Air New Zealand DC-10 on the lower slopes of Mount Erebus on Nov. 28, 1979. This book is his report to the New Zealand government of his opinion as to the cause of the crash. It includes testimony, some verbatim, from the Chief Executive and management and technical personnel of Air New Zealand, New Zealand Civil Aviation, the Chief Inspector, the Airlines Pilots Association, U.S. Navy McMurdo personnel, and the survivors, *inter al.* It was the view of Air New Zealand and the Chief Inspector that pilot error was the primary cause of the crash. As the inquiry developed, however, it became clear that their evidence was highly suspect in many respects. In the end the Royal Commissioner concluded that two factors working together caused the crash and that neither of them occurring alone would have produced the disaster. This flight, in common with other commercial flights, was navigated by an inertial system which automatically kept the plane on a predetermined course. On this flight the usual course from New Zealand to Antarctica had been altered and pre-set into the inertial system without the knowledge of the pilots. The altered course took the flight nearly 30 miles east of the course the pilots had been briefed on and thought they were flying. The other factor was the antarctic whiteout which enveloped Erebus' slopes. The standard course would have kept the flight away from the whiteout danger on Mount Erebus. On the altered course with no whiteout, the pilots would have recognized the course discrepancy from visual checkpoints and could have taken corrective action. Both factors together led to disaster.

40-355

**Tidal behaviour under an antarctic ice shelf.** Potter, J.R., et al, *British Antarctic Survey. Bulletin*, Aug. 1985, No.68, p.1-18, 26 refs.

**Ice shelves, Ice edge, Tides, Antarctica—George VI Ice Shelf.**

Two short tidal height records and one short current record are presented. The measurements were taken near the two narrow ice fronts at the north and south ends of George VI Ice Shelf, Antarctic Peninsula. At both ice fronts there is significant tidal height energy in the first seven tidal species, indicating strong non-linear interaction, not all of which can be attributed to shallow-water or frictional terms. In addition, there is severe absorption of tidal energy at the M<sub>2</sub>/2 frequency. Major tidal constituent values are calculated for both ice fronts. Apart from M<sub>2</sub>/2, comparisons with published numerical tidal simulations show good agreement, especially at the northern ice front, which, nevertheless, shows significant differences from the results of a previous tidal record nearby. George VI Sound is shown to be ineffective for tidal transmission. Calculations based on the limited data show that very little tidal energy enters the south of the sound but that rather more propagates into the north. The net tidal energy flux under the shelf is calculated. The very low value has important implications for theories of tidal dissipation by ice shelves. (Auth.)

40-356

**Ice surface and bedrock topography in Coats Land and part of Dronning Maud Land, Antarctica, from satellite imagery.**

Marsh, P.D., *British Antarctic Survey. Bulletin*, Aug. 1985, No.68, p.19-36, 47 refs.

**Ice surface, Surface structure, Topographic features, Bottom topography, Spaceborne photography, Antarctica—Coats Land, Antarctica—Queen Maud Land.**

Near-infrared images from Landsat MSS Band 7 and NOAA Very High Resolution Radiometer channel 2 give a synoptic

view of ice surface features. Comparison with survey data collected by ground parties shows that the most prominent features, with wavelengths between 2 and 10 km, are undulations with slope changes as small as 0.5 deg. The imagery permits the mapping of zones with similar surface topography, which outline shapes of the glaciers feeding Filchner Ice Shelf, and topographic highs associated with exposed mountain ranges. The relationship of the undulations to these major features, and published radio-echo sounding data, support the conclusion of workers elsewhere that the surface undulations are mainly related to bottom topography. Discontinuities in the surface topography are inferred to indicate discontinuities in bedrock morphology and are used to suggest the location of subglacial scarps and other changes in bedrock elevation. The orientation of the inferred bedrock features suggests that many are fractures associated with Mesozoic rifting along the Weddell Sea and Filchner Ice Shelf margins of the continent. (Auth.)

40-357

**Transformation of a tundra river from heterotrophy to autotrophy by addition of phosphorus.**

Peterson, B.J., et al, *Science*, Sep. 27, 1985, 229(4720), p.1383-1386, 23 refs.

**Tundra, Rivers, Water chemistry, Photosynthesis, Algae, Bacteria.**

40-358

**Increase of atmospheric methane recorded in antarctic ice core.**

Stauffer, B., et al, *Science*, Sep. 27, 1985, 229(4720), p.1386-1388, 13 refs.

**Fischer, G., Neftel, A., Oeschger, H. Ice cores, Atmospheric composition, Gas inclusions, Bubbles, Antarctica—Siple Station.**

Air entrapped in bubbles of cold ice has essentially the same composition as that of the atmosphere at the time of bubble formation. Measurements of the methane concentration in air extracted by two different methods from ice samples from Siple Station in western Antarctica allow the reconstruction of the history of the increase of the atmospheric methane during the past 200 years.

40-359

**Influence of coal porosity on the effectiveness of freeze conditioning agents.**

Richardson, P.F., et al, *Mining engineering*, Aug. 1985, 37(8), p.1057-1061, 10 refs.

**Roe, W.J., Perisho, J.L. Coal, Frozen cargo, Porosity, Moisture, Antifreezes, Logistics, Compressive properties.**

40-360

**Permanent bypass installed. Pipeline and gas journal.** July 1985, 212(7), p.30-40.

**Pipelines, Maintenance, Hot oil lines, United States—Alaska.**

40-361

**Protection of arctic submarine pipelines against ice scour.**

Nessim, M.A., et al, *Journal of energy resources technology*, Sep. 1985, 107(3), p.356-361, 17 refs.

**Jordaan, I.J. Ice scouring, Ocean bottom, Underground pipelines, Countermeasures, Trenching, Damage, Models.**

40-362

**Damage mechanics model for uniaxial deformation of ice.**

Karr, D.G., *Journal of energy resources technology*, Sep. 1985, 107(3), p.363-368, 14 refs.

**Ice deformation, Ice cracks, Static loads, Stress strain diagrams, Ice elasticity, Ice plasticity, Brittleness, Fracturing, Models.**

40-363

**Grain size and the compressive strength of ice.** Cole, D.M., *Journal of energy resources technology*, Sep. 1985, 107(3), p.369-374, 15 refs.

**Ice strength, Ice mechanics, Compressive properties, Grain size, Loads (forces), Ice crystal structure, Stress strain diagrams, Ice cracks, Temperature effects, Fracturing.**

This work presents the results of uniaxial compression tests on freshwater polycrystalline ice. Grain size of the test material ranged from 1.5 to 5 mm, strain rate ranged from 1/1,000,000 to 1/100/s and the temperature was -5°C. The grain size effect emerged clearly as the strain rate increased to 1/100,000/s and persisted to the highest applied strain rates. On average, the stated increase in grain size brought about a decrease in peak stress of approximately 31 percent. The occurrence of the grain size effect coincided with the onset of visible cracking. The strength of the material increased to a maximum at a strain rate of 1/1,000/s, and then dropped somewhat as the strain rate increased further to 1/100/s. Strain at peak stress generally tended to decrease with both increasing grain size and increasing strain rate. The results are discussed in terms of the deformation mechanisms which lead to the observed behavior.

40-364

**Tensile strength of multi-year pressure ridge sea ice samples.**

Cox, G.F.N., et al, *Journal of energy resources technology*, Sep. 1985, 107(3), p.375-380, 20 refs.

**Richter-Menge, J.A. Pressure ridges, Ice strength, Tensile properties, Sea ice, Strains, Tests.**

Thirty-six constant strain-rate uniaxial tension tests were performed on vertically oriented multi-year pressure ridge samples from the Beaufort Sea. The tests were performed on a closed-loop electro-hydraulic testing machine at two strain rates (1/10,000 and 1/1,000/s) and two temperatures (-20 and -5°C). This paper summarizes the sample preparation and testing techniques used in the investigation and presents data on the tensile strength, initial tangent modulus, and failure strain of the ice.

40-365

**Quantitative analysis of ice sheet failure against an inclined plane.**

Frederking, R.M.W., et al, *Journal of energy resources technology*, Sep. 1985, 107(3), p.381-387, 10 refs.

**Timco, G.W. Ice loads, Offshore structures, Ice solid interface, Floating ice, Ice mechanics, Ice sheets, Ice floes, Flexural strength, Slope orientation, Mathematical models, Buoyancy, Ice friction.**

40-366

**Influence of continental ice sheets on the climate of an ice age.**

Manabe, S., et al, *Journal of geophysical research*, Feb. 20, 1985, 90(D1), p.2167-2190, Refs. p.2189-2190.

**Broccoli, A.J. Albedo, Ice sheets, Paleoclimatology.**

The climate influence of the land ice that existed 18,000 years before present (18K B.P.) is investigated by use of a general circulation model of the atmosphere coupled with a static mixed layer ocean. Simulated climates are obtained from two versions of the model: one with the land ice distribution of the present and the other with that of 18K B.P. The distribution of sea surface temperature (SST) difference between the two experiments in the northern hemisphere resembles the difference between the SST at 18K B.P. and at present, as estimated by the CLIMAP Project (1981). The 18K B.P. ice sheets have very little influence upon atmospheric temperature and SST in the southern hemisphere. This is because the interhemispheric heat transport hardly changes as the loss of heat energy due to the reflection of solar radiation by continental ice sheets in the northern hemisphere is almost completely counterbalanced by the in situ reduction of upward terrestrial radiation. (Auth. mod.)

40-367

**Heat supply problems under Far Northern conditions.** (Problemy teplosnabzheniia v usloviakh Krainego Severa),

Kolodeznikov, R.P., ed, Yakutsk, Yakut. fil. SO AN SSSR, 1984, 105p., In Russian. For selected papers see 40-368 through 40-380. Refs. passim.

**Urzhumtsev, I.U.S., ed. Natural resources, Residential buildings, Industrial buildings, Heating, Heat pipes, Thermal insulation, Electric power, Subpolar regions, Nuclear power, Fuels, Equipment, Economic analysis.**

40-368

**Trends in the development of heat supply and district-heating systems under new power complex development conditions in the USSR.** (Osnovnye napravleniia razvitiia teplosnabzheniia i teplofikatsii v novykh usloviakh formirovaniia energeticheskogo kompleksa SSSR),

Khrilev, L.S., et al, Problemy teplosnabzheniia v usloviakh Krainego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.4-13, In Russian. 5 refs.

**Bautin, S.M., Il'kevich, Z.A., Kochanov, S.A. Heating, Residential buildings, Industrial buildings, Electric power, Subpolar regions, Nuclear power, Fuels.**

40-369

**Heat supply problems in the northeastern European USSR.** (Problemy teplosnabzheniia evropeiskogo Severo-Vostoka SSSR),

Zorkal'tsev, V.I., et al, Problemy teplosnabzheniia v usloviakh Krainego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.13-22, In Russian. 5 refs.

**Kalinina, A.A., Kolobov, I.U.I. Industrial buildings, Residential buildings, Heating, Electric power, Nuclear power, Heat pipes, Fuels.**

- 40-370**  
Development of district heating systems in the Murmansk area. [O razvitií teplofikatsii Murmanskoi oblasti]. Stepanov, I.R., et al. Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.22-29, In Russian. 8 refs. Barannik, B.G., Kalinina, N.V., Zarudniaia, N.A. Natural resources, Residential buildings, Mining, Industrial buildings, Heating, Electric power, Nuclear power, Fuels, USSR—Kola Peninsula.
- 40-371**  
Trends in the development of nuclear and organic-fuel heating systems for conditions of the Yakut ASSR. [Osnovnye napravleniia razvitiia sistem teplosnabzheniia na organicheskoi i iadernoi toplive v usloviakh Iakutskoi ASSR]. Shadrin, A.P., Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.34-45, In Russian. 6 refs. Heating, Electric power, Subpolar regions, Nuclear power, Fuels.
- 40-372**  
Centralized heat supply of Yakutia and its development. [Tsentrálizovannoe teplosnabzhenie v Iakutii i perspektivy ego razvitiia]. Kolodeznikov, R.P., Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.45-51, In Russian. 7 refs. Urban planning, Heating, Heat pipes, Equipment, Industrial buildings, Residential buildings.
- 40-373**  
Methodological aspects of evaluating energy-supply systems and the significance of different factors in choosing optimal average-capacity heating systems. [O metodologicheskikh aspektakh otsenki sistem energosnabzheniia i o znachimosti razlichnykh faktorov pri vybere optimal'nykh sistem teplosnabzheniia nebol'shoi moshchnosti]. Barabaner, Kh.Z., Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.64-68, In Russian. 1 ref. Electric power, Fuels, Heating, Systems analysis, Economic analysis.
- 40-374**  
Thermal protection of engineering structures and communications under Yakutian conditions. [Teplovaia zashchita inzhenernykh sooruzhenii i kommunikatsii v usloviakh Iakutii]. Ivanov, N.S., et al. Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.68-72, In Russian. 2 refs. Kozhevnikov, N.N., Dranaeva, A.G., Skriabin, V.I. Municipal engineering, Telecommunication, Residential buildings, Walls, Microclimatology, Heat pipes, Thermal insulation, Heat loss, Cellular plastics.
- 40-375**  
Heat supply to municipal buildings in the North and the economy of fuel energy. [Teplosnabzhenie grazhdanskikh zdanií na Severe i puti ekonomii teploty energii]. Iankina, T.I., Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.73-77, In Russian. Foundations, Municipal engineering, Residential buildings, Walls, Heating, Permafrost beneath structures, Design, Heat loss.
- 40-376**  
Problems of heat supply in the agricultural areas near the Vilyuy River. [Problemy toplivospobzheniia priviliuskikh sel'skokhoziaistvennykh raionov]. Petrov, N.A., et al. Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.77-80, In Russian. 1 ref. Dmitriev, D.E., Fedorova, T.K., Li, G.S. Industrial buildings, Houses, Agriculture, Heating, Fuels.
- 40-377**  
Heat and electric power supply to agricultural areas of Siberia and the Far East. [Elektrotoplosnabzhenie i skokhoziaistvennoe proizvodstva Sibiri i Dal'nego Vostoka]. Menovshchikov, I.U.A., et al. Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.80-87, In Russian. Delagin, V.N. Houses, Industrial buildings, Foundations, Agriculture, Permafrost beneath structures, Heating, Electric power, Fuels, Construction materials.
- 40-378**  
Experience in operating the equipment of heating systems of the Yakutian state regional electric power plant. [Opyt ekspluatatsii teplofikatsionnogo oborudovaniia Iakutskoi GRES]. Spiridenko, V.V., Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.87-91, In Russian. Buildings, Foundations, Piles, Walls, Permafrost beneath structures, Electric heating, Equipment, Construction materials.
- 40-379**  
Heat supply to BAM settlements and ways of economizing fuel energy. [Teplosnabzhenie poselkov v zone BAMA i puti ekonomii toplivno-energeticheskikh resursov]. Peker, I.A.D., Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.92-97, In Russian. 3 refs. Buildings, Houses, Foundations, Heating, Electric power, Equipment, Heat pipes, Fuels, Thermal insulation.
- 40-380**  
Solar energy heating systems and possibilities of using them in Central Yakutia. [Sistemy solnechnogo teplosnabzheniia i vozmozhnosti ikh primeneniia v usloviakh tsentra'noi Iakutii]. Il'in, M.M., Problemy teplosnabzheniia v usloviakh Kraínego Severa (Heat supply problems under Far Northern conditions) edited by R.P. Kolodeznikov and I.U.S. Urzhumtsev, Yakutsk, Yakut. fil. SO AN SSSR, 1984, p.98-104, In Russian. Solar radiation, Residential buildings, Fuels, Houses, Heating.
- 40-381**  
Mathematical problems of the mechanics of continuous media (Dynamics of continuous media). [Matematicheskie problemy mekhaniki sploshnykh sred (Dinamika sploshnoi sredy)]. Monakhov, V.N., ed. Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Sbornik nauchnykh trudov, 1984, Vol.67, 167p., In Russian. For selected papers see 40-382 and 40-383. Refs. passim. Stefan problem, Phase transformations, Heat transfer.
- 40-382**  
Univariate, multifrontal Stefan problem. [Odnomernaia mnogofrontovaiia zadacha Stefana]. Kaliev, I.A., Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Sbornik nauchnykh trudov, 1984, Vol.67, p.37-52, In Russian. Stefan problem, Phase transformations, Heat transfer, Mathematical models.
- 40-383**  
Monotone free boundary in two-dimensional Stefan problem. [Monotonnost' svobodnoi granitsy v dvukhsloznoi zadache Stefana]. Petrova, A.G., Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Sbornik nauchnykh trudov, 1984, Vol.67, p.97-99, In Russian. 2 refs. Stefan problem, Thermal conductivity, Phase transformations, Crystal growth.
- 40-384**  
Dynamics of multiphase media (Dynamics of continuous media). [Dinamika mnogofaznykh sred (Dinamika sploshnoi sredy)]. Monakhov, V.N., ed. Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Sbornik nauchnykh trudov, 1984, Vol.68, 162p., In Russian. For selected paper see 40-385. 3 refs. DLC QA808.2.D54 Stefan problem, Phase transformations, Mathematical models, Heat transfer.
- 40-385**  
Structure of generalized solutions of univariate Stefan problems. [K voprosu o strukture obobshchennykh resheniií odnomernoi zadachi Stefana]. Kaliev, I.A., Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Sbornik nauchnykh trudov, 1984, Vol.68, p.92-98, In Russian. 3 refs. Stefan problem, Phase transformations, Heat transfer.
- 40-386**  
Hydraulic water-transport and deep-sea structures. [Gidrotekhnicheskie vodnotransportnye i glubokovodnye sooruzheniia]. Mikhailov, A.V., ed. Moscow. Inzhenerno-stroitel'nyi institut. Sbornik trudov, 1984, No.192, 156p., In Russian. For selected papers see 40-387 through 40-389. Refs. passim. DLC TA7.M62A3 Sea ice distribution, Drift, Ice loads, Hydraulic structures, Foundations, Piles, Pipelines, Concrete structures, Reinforced concrete.
- 40-387**  
Calculating the load of drifting ice on conical supports of hydraulic structures. [K voprosu rascheta nagruzki ot drefuiushchego ledianogo polia na konicheskie opory gidrotekhnicheskikh sooruzhenii]. Uporov, A.V., Moscow. Inzhenerno-stroitel'nyi institut. Sbornik trudov, 1984, No.192, p.66-70, In Russian. 5 refs. DLC TA7.M62A3 Hydraulic structures, Ice (construction material), Supports, Sea ice, Drift, Ice loads, Experimentation, Analysis (mathematics), Okhotsk Sea.
- 40-388**  
Laboratory investigations of ice-loads on slanting elements of structures in petroleum industry. [Laboratornye issledovaniia ledovykh nagruzok na naklonnyye elementy neftegazopromyslovnykh sooruzhenii]. Kulikov, G.S., Moscow. Inzhenerno-stroitel'nyi institut. Sbornik trudov, 1984, No.192, p.71-77, In Russian. 8 refs. DLC TA7.M62A3 Ice conditions, Sea ice distribution, Hydraulic structures, Ice loads, Pipelines, Piles, Foundations, USSR—Caspian Sea.
- 40-389**  
Studies of the stress-strain state of ice-pressure resistant reinforced concrete models of supports. [Issledovaniia napriazhenno-deformirovannogo sostoiianiia zhelezobetonnoi modeli ledostoikoí opory]. Almazov, V.O., et al. Moscow. Inzhenerno-stroitel'nyi institut. Sbornik trudov, 1984, No.192, p.143-150, In Russian. 2 refs. Kopalgorodskii, E.M., Shmaevich, L.I. DLC TA7.M62A3 Sea ice distribution, Drift, Hydraulic structures, Ice loads, Concretes, Reinforced concretes.
- 40-390**  
Quantitative seismology and aseismic construction in the Far East. Summaries of papers presented at the scientific session of the Far Eastern Section of the Interdepartmental Council on Seismology and Aseismic construction. [Kolichestvennaia seismologiya i seismostoiokoe stroitel'stvo na Dal'nem Vostoke. Nauchnaia sessiia Dal'nevostochnoi sektií MSSSS, Magadan, March 18-22, 1985. Tezisy dokladov]. Izmailov, L.I., et al. Iuzhno-Sakhalinsk, 1985, 127p., In Russian. For selected papers see 40-391 through 40-395. Refs. passim. Ivashchenko, A.I., ed. Permafrost physics, Earthquakes, Wave propagation, Seismic velocity, Modular construction, Permafrost beneath structures, Foundations, Piles.
- 40-391**  
Horizontal oscillations of piles in plastic frozen ground. [Gorizontál'nye kolebaniia sval v plastichno-merzlykh gruntakh]. Danielov, E.R., et al. Koltchestvennaia seismologiya i seismostoiokoe stroitel'stvo na Dal'nem Vostoke. Nauchnaia sessiia Dal'nevostochnoi sektií MSSSS, Magadan, March 18-22, 1985. Tezisy dokladov (Quantitative seismology and aseismic construction in the Far East. Summaries of papers presented at the scientific session of the Far Eastern Section of the Interdepartmental Council on Seismology and Aseismic construction) edited by L.I. Izmailov and A.I. Ivashchenko, Iuzhno-Sakhalinsk, 1985, p.104, In Russian. Gorski, V.F., Shliakis, A.A. Foundations, Piles, Permafrost beneath structures, Frozen rock strength, Plastic properties.

40-392

**Problems and principles of aseismic construction in the Far Northeast.** [Zadachi i printsipy seismostoitkogo stroitel'stva na Dal'nem Vostoke. Nauchnaia sessiia Dal'nevostochnoi sektiis MSSSS, Magadan, March 18-22, 1985. Tezisy dokladov (Quantitative seismology and aseismic construction in the Far East. Summaries of papers presented at the scientific session of the Far Eastern Section of the Interdepartmental Council on Seismology and Aseismic construction) edited by L.I. Izmailov and A.I. Ivashchenko, IUzhno-Sakhalinsk, 1985, p.105-106, In Russian.

**Continuous permafrost, Permafrost beneath structures, Earthquakes, Buildings, Design.**

40-393

**Allowing for seismic effects when designing building enclosures.** [Uchet seismicheskikh vozdeistvii pri proektirovanii ogradzhdaiushchikh konstruktov zdaniy].

Samarin, S.A., Kolichestvennaia seismologiya i seismostoitkoe stroitel'stvo na Dal'nem Vostoke. Nauchnaia sessiia Dal'nevostochnoi sektiis MSSSS, Magadan, March 18-22, 1985. Tezisy dokladov (Quantitative seismology and aseismic construction in the Far East. Summaries of papers presented at the scientific session of the Far Eastern Section of the Interdepartmental Council on Seismology and Aseismic construction) edited by L.I. Izmailov and A.I. Ivashchenko, IUzhno-Sakhalinsk, 1985, p.106-108, In Russian.

**Earthquakes, Buildings, Wind factors, Walls, Permafrost beneath structures, Joints (junctions).**

40-394

**Structures of five to nine story buildings of increased seismic stability, in areas with earthquakes of magnitude 7 to 8 on the Richter scale.** [Konstruktsii 5-9 etazhnykh blochnykh zdaniy povyshennoi seismostoitkosti dlia ploshchadok seismichnosti 7-8 ball'ov]. Dudkin, G.I., Kolichestvennaia seismologiya i seismostoitkoe stroitel'stvo na Dal'nem Vostoke. Nauchnaia sessiia Dal'nevostochnoi sektiis MSSSS, Magadan, March 18-22, 1985. Tezisy dokladov (Quantitative seismology and aseismic construction in the Far East. Summaries of papers presented at the scientific session of the Far Eastern Section of the Interdepartmental Council on Seismology and Aseismic construction) edited by L.I. Izmailov and A.I. Ivashchenko, IUzhno-Sakhalinsk, 1985, p.108-109, In Russian.

**Thermal insulation, Modular construction, Earthquakes, Permafrost beneath structures, Walls.**

40-395

**Construction principles of effective seismometric columns and their classification for permafrost areas.** [Printsipy postroeniia effektivnykh seismicheskikh kolonok i ikh tipizatsiia dlia rai'onov razvitiia mnogoletnei merzloty].

Sedov, B.M., Kolichestvennaia seismologiya i seismostoitkoe stroitel'stvo na Dal'nem Vostoke. Nauchnaia sessiia Dal'nevostochnoi sektiis MSSSS, Magadan, March 18-22, 1985. Tezisy dokladov (Quantitative seismology and aseismic construction in the Far East. Summaries of papers presented at the scientific session of the Far Eastern Section of the Interdepartmental Council on Seismology and Aseismic construction) edited by L.I. Izmailov and A.I. Ivashchenko, IUzhno-Sakhalinsk, 1985, p.116-117, In Russian.

**Earthquakes, Acoustic measurement, Models, Permafrost physics, Seismic velocity.**

40-396

**Hydrogeological investigations in the Amur River region.** [Gidrogeologicheskie issledovaniia v Priamur'e].

Karavanov, K.P., ed. Vladivostok, 1979, 254p. In Russian. For selected paper see 40-397. 7 refs.

**Hydrogeology, Ground water, Water intakes, Ice-bound rivers, Baykal Amur railroad, Freezep, Alpine landscapes, Taiga.**

40-397

**Selection of ground-water intake sections in valleys of frozen rivers.** [O vybere uchastkov vodozaborov podzemnykh vod dolinakh peremerzaiushchikh rek]. Kulakov, V.V., Gidrogeologicheskie issledovaniia v Priamur'e (Hydrogeological investigations in the Amur River region, edited by K.P. Karavanov and A.I. Trufanov, Vladivostok, 1979, p.91-93, In Russian. 7 refs.

**Water intakes, Icebound rivers, Baykal Amur railroad, Freezep, Hydrogeology, Ground water, Alpine landscapes, Taiga.**

40-398

**Influence of urban ice and snow control without salt on traffic safety and flow.** Pt. 3. Experiences of the test in Berlin during winters 1980/81 and 1981/82. [Einfluss eines streusalzlosen Strassenwinterdienstes in Stdten auf Verkehrssicherheit und Verkehrsablauf. Teil 3: Erfahrungen aus dem Berliner Versuch in den Wintern 1980/81 und 1981/82].

Hoffmann, G., et al, *Strasse und Autobahn*, June 1985, 36(6), p.242-251, In German. 3 refs.

Zmeck, D.

**Ice control, Ice removal, Snow removal, Winter maintenance, Road maintenance, Streets, Safety, Trafficability.**

40-399

**Quaternary sedimentation in Shelikof Strait, Alaska.** Hompton, M.A., *Marine geology*, 1985, No.62, p.213-253, Refs. p.251-253.

**Quaternary deposits, Marine deposits, Ocean bottom, Sedimentation, Marine geology, Glacial deposits, Pleistocene, Paleoclimatology, Grain size, United States—Alaska—Shelikof Strait.**

40-400

**Comparison of SPOT simulator data with Landsat MSS imagery for delineating water masses in Delaware Bay, Broadkill River, and adjacent wetlands.** Ackleson, S.G., et al, *Photogrammetric engineering and remote sensing*, Aug. 1985, 60(8), MP 1909, p.1123-1129, 5 refs.

Klemas, V., McKim, H.L., Merry, C.J.

**Water reserves, Remote sensing, Hydrodynamics, Radiometry, LANDSAT, Water flow, Delaware Bay.**

The radiometric and spatial qualities of SPOT simulator and Landsat-3 MSS data are compared as to their ability to distinguish different water masses within Delaware Bay and adjacent wetland areas. The SPOT simulator data contain a greater range of gray level values for all water areas than do the Landsat MSS data. The greater spatial resolution of the SPOT simulator data provides information about small-scale hydrodynamics not available on the Landsat MSS data. Both types of data show a plume of spectrally unique water flowing from Roosevelt Inlet into Delaware Bay. The plume is most visible in SPOT simulator band 1 (500-590 nm) and Landsat MSS band 4 (500-600 nm). In both bands, the plume appears dark relative to the surrounding Delaware Bay water. Recent hydrographic surveys characterize the plume as an ebb tidal feature with high concentrations of dissolved and particulate organic matter believed to originate from the adjacent Canary Creek Marsh and Great Marsh. SPOT simulator data are found to delineate water masses with a high degree of separation. Radiometrically degraded SPOT data produce similar results. Landsat-3 MSS data, although useful for delineating water masses, do not produce good separation because of sensor noise.

40-401

**Focus: hydrology of snow and ice.**

Woo, M.-K., *Canadian geographer*, Summer 1985, 29(2), p.173-183, 19 refs.

**Snow hydrology, Glacial hydrology, Glaciers, Lake ice, River ice, Snowmelt, Floods, Canada.**

40-402

**Biological activity of soils in mountain forests of Siberia.** [Biologicheskaiia aktivnost' pochv gornykh lesov Sibiri].

Rukosueva, N.P., et al, Novosibirsk, Nauka, 1985, 88p., In Russian with English table of contents enclosed. Refs. p.77-87.

Gukasian, A.B.

**Taiga, Soil microbiology, Forest soils, Cryogenic soils, Mountain soils, Ecosystems, Biomass, Soil classification, Soil composition, Soil chemistry.**

40-403

**Geographic problems of studying and utilizing Arctic seas.** Abstracts. [Geograficheskie problemy izucheniia i osvoeniia arkticheskikh morei]. Tezisy dokladov.

Vsesoiuznaia konferentsiia po geografii i kartografirovaniu okeana, 2nd, Murmansk, May 1985, Leningrad, 1985, 196p., In Russian with English table of contents enclosed.

Korotkevich, E.S., ed, Slevich, S.B., ed.

**Mapping, Biogeography, Ocean environments, Ecosystems, Marine biology, Biomass, Marine transportation, Natural resources, Economic development, Minerals, Electric power, Arctic Ocean.**

40-404

**Phytoidication of environmental conditions and natural processes in high mountains.** [Fitoidikatsiia uslovii sredi i prirodnykh protsessov v vysokogor'akh].

Gorchakovskii, P.I., et al, Moscow, Nauka, 1985, 209p., In Russian with English table of contents enclosed. Refs. p.186-208.

Shutov, S.G.

**Taiga, Ecosystems, Slope processes, Forest fires, Forest tundra, Tundra, Lichens, Landslides, Alpine landscapes, Mosses, Mudflows, Solifluction, Avalanches.**

40-405

**Remote sensing instrumentation: technology for science and applications; Vols. 1 and 2.**

International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, 1166p., Refs. passim. For selected papers see 40-406 through 40-426.

**Remote sensing, Sea ice distribution, Microwaves, Ice electrical properties, Ice acoustics, Ice conditions, Runoff forecasting, Electromagnetic properties, Ice crystal structure, Ice physics, Meetings.**

40-406

**Progress in snow hydrology remote sensing research.** Rango, A., International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.28-29, 1 ref.

**Snow hydrology, Remote sensing, Snow cover distribution, Runoff forecasting, Floods.**

40-407

**Large area snowmelt runoff simulations based on Landsat-MSS data.**

Baumgartner, M.F., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.30-38, 14 refs.

Seidel, K., Haeferner, H., Itten, K.I., Martinec, J. **Snowmelt, Runoff, Remote sensing, Cloud cover, LANDSAT, Data processing, Mountains, Switzerland—Alps.**

40-408

**Remote sensing of saline ice in a laboratory environment, an overview.**

Swift, C.T., International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.72-75.

**Sea ice, Remote sensing, Microwaves, Radiometry, Electromagnetic properties, Experimentation.**

40-409

**Simulated sea ice used for correlating the electrical properties of the ice with its structural and salinity characteristics.**

Gow, A.J., MP 1910, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.76-82.

**Ice electrical properties, Sea ice, Ice crystal structure, Ice salinity, Remote sensing, Reflectivity, Ice cover thickness, Ice growth, Experimentation.**

40-410

**Dielectric properties at 4.75 GHz of saline ice slabs.** Arcone, S.A., et al, MP 1911, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.83-86, 10 refs.

McGrew, S.G.

**Ice electrical properties, Sea ice, Ice salinity, Microwaves, Dielectric properties, Radiometry, Brines, Experimentation.**

The complex relative dielectric permittivity of saline ice slabs removed from an artificially grown ice sheet has been measured at 4.75 GHz as a function of temperature. The frequency lies within the range used by other researchers who conducted radiometric tests concurrently on the same ice sheet. The slabs were placed between open waveguide radiators and dielectric properties calculated from the forward scattering coefficient. The results show both real ( $k'$ ) and imaginary ( $k''$ ) parts to vary almost in direct proportion to the brine volume. However, the values for  $k''$  show more variation, probably due to scattering.

40-411

**Laboratory studies of acoustic scattering from the underside of sea ice.**

Jezek, K.C., et al, MP 1912, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.87-91.

**Ice acoustics, Ice bottom surface, Sea ice, Attenuation, Remote sensing, Acoustic measurement.**

An analysis has shown that reflection coefficient for growing ice is about .06. This coefficient increases dramatically as the ice decays. At frequencies above 100 kHz, scattering is dominated by the dendrites at the base of the ice. Fluctuations in normal incidence echoes are significant above 100 kHz. Back scatter from the underside of sea ice does not change significantly as the ice grows out of the melt (0 to 10 cm thick). Attenuation is found to be far greater than the attenuation reported

ed by Langleben who performed measurements horizontally and away from the dendritic layer (same acoustic frequencies)

40-412

**Multifrequency observations of brightness temperature of artificial new and young sea ice.**

Grenfell, T.C., International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.92-98, 5 refs.

**Ice physics, Sea ice, Radiometry, Remote sensing, Microwaves, Spectra, Artificial ice, Ice cover thickness, Brightness, Surface temperature, Air temperature.**

40-413

**Photogrammetry and remote sensing in periglacial geomorphology.**

Howland, W.G., International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.119-124, 4 refs.

**Geomorphology, Periglacial processes, Remote sensing, Photogrammetry, Topographic features.**

40-414

**Quantitative determination of aerosol optical parameters from monostatic lidar measurements.**

Reagan, J.A., International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.192-197, 9 refs.

**Aerosols, Optical properties, Remote sensing, Lidar, Analysis (mathematic).**

40-415

**Texture and fabric of the second year sea ice cover at Mould Bay, Prince Patrick Island, NWT, April, 1983.**

Bjerkelund, C.A., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.426-431, 6 refs.

**Lapp, D.J., Ramsier, R.O., Sinha, N.K. Ice crystal structure, Sea ice, Ice cover thickness, Ice salinity, Ice growth, Ice structure.**

40-416

**Extracting sea ice data from satellite SAR imagery.**

Fily, M., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.437-437, 11 refs.

**Rothrock, D.A. Sea ice distribution, Remote sensing, Radar photography, Brightness, Ice edge.**

40-417

**SAR remote sensing during MIZEX 84.**

Shuchman, R.A., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.439-443.

**Burns, B.A. Sea ice distribution, Ice edge, Remote sensing, Ice detection, Ice conditions, Photointerpretation, Ice floes, Backscattering, Wave propagation.**

40-418

**Measurement of sea ice backscatter characteristics at 36 GHz using the surface contour radar.**

Fedor, L.S., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.446-451, 3 refs.

**Walsh, E.S. Sea ice distribution, Backscattering, Remote sensing, Ice conditions, Surface properties, Radar photography.**

40-419

**Sea ice observations of the Weddell-Scotia Seas with SIR-B imagery.**

Holt, B., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 1, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.452-453, 1 ref.

**Carsey, F.D., Yang, W.-L. Sea ice distribution, Ice edge, Radar photography, Remote sensing, Photogrammetry, Ice conditions, Antarctica—Weddell Sea, Scotia Sea.**

The first radar imagery of sea ice in the southern ocean was acquired of the Weddell-Scotia Sea marginal ice zone with the

SIR-B system on October 9, 11, and 12, 1984. The imagery contains coverage of inner pack ice with large, compact floes, linearly organized ice in a transition zone about 80% ice covered, followed by wavy ice bands or aggregates of small floes in the marginal ice zone about 20-30% ice covered. Ice/water concentrations of these regions were derived from the radar imagery by first utilizing a median filter to reduce radar speckle and then a supervised classification technique. The accuracy of the derived concentrations varied with the nature of the ice itself and radar incidence angle.

40-420

**100 MHz dielectric constant measurements of snow cover: dependence on environmental and snow pack parameters.**

Burns, B.A., et al, MP 1913, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 2, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.829-834, 3 refs.

**Larson, R.W., Onstott, R.G., Fisk, D.J. Snow cover distribution, Snow electrical properties, Remote sensing, Microwaves, Dielectric properties, Snow depth, Snow water content, Surface roughness, Snow temperature, Snow density.**

Snow cover of both land and ocean (sea ice) areas presents a challenge to remote sensing. On one hand, it acts as a mask over surfaces of interest and part of the remote sensing problem is then to determine whether the snow cover is transparent, opaque, or partially transparent resulting in an ambiguous signature. On the other hand, the properties of the snow cover itself may be of interest, such as depth, snow water equivalent and coverage. Microwave remote sensors in particular have potential to monitor these properties because of their capabilities to penetrate the surface, detect small wetness differences and operate in all weather conditions (Foster, et al, 1985). To realize this potential, it is necessary to understand how snow properties affect remote sensing signatures. Microwave signatures of snow are a function of dielectric constant as well as surface roughness and depth. A primary objective therefore is to determine the relationship between the dielectric constant and environmental parameters, including physical properties of the snow cover and local meteorological variables.

40-421

**Effect of liquid water on the dielectric properties of snow.**

Shivola, A., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 2, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.836-841, 7 refs.

**Nyfors, E., Tiuri, M. Snow electrical properties, Wet snow, Microstructure, Remote sensing, Unfrozen water content, Dielectric properties, Mathematical models.**

40-422

**Millimeter-wave backscatter from snowcover.**

Williams, L.D., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 2, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.842-847, 11 refs.

**Birnie, R.V., Gallagher, J.G. Snow surface, Radar echoes, Wave propagation, Backscattering, Wet snow, Unfrozen water content, Grain size, Surface roughness, Porosity.**

40-423

**Remote sensing of snow water equivalent using NIMBUS-7 SMMR data.**

Hallikainen, M., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 2, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.850-855, 2 refs.

**Jolma, P. Snow water equivalent, Remote sensing, Microwaves, Radiometry, Snow surface, Brightness, Seasonal variations.**

40-424

**Ice conditions on the Ohio and Illinois rivers, 1972-1985.**

Gatto, L.W., MP 1914, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 2, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.856-861, 3 refs.

**River ice, Ice conditions, Ice forecasting, Remote sensing, Mapping, Aerial surveys, United States—Ohio River, United States—Illinois River.**

40-425

**Computer simulation model for pulsed electromagnetic waves in polar ice sheets.**

Sivaprasad, K., et al, International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 2, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.862-867, 1 ref.

**Petrin, M. Ice electrical properties, Electromagnetic properties, Ice mechanics, Thermodynamics, Radar echoes, Wave propagation, Echo sounding, Reflection, Computerized simulation, Models.**

Extensive radar echo soundings of the Greenland and Antarctic ice sheets have been carried out from the air to help in the study of the dynamics, thermodynamics, and the past history of the ice sheets. One of the distinctive features of the data is the partial reflections from the ice sheet over wide areas in Central Greenland and Antarctica. To explain these partial reflections, the polar ice sheet was modelled as a general one-dimensional, planar, multilayered medium and the time reflection coefficient for a given input pulse was numerically computed, using a transmission line approach.

40-426

**Radar sounding of ice masses containing liquid water.**

Hodge, S.M., International Geoscience and Remote Sensing Symposium (IGARSS '85), Amherst, MA, Oct. 7-9, 1985. Digest, Vol. 2, New York, Institute of Electrical and Electronics Engineers, Inc., 1985, p.868-873.

**Glacier surveys, Glacier beds, Radar echoes, Ice sheets, Remote sensing, Ice water interface, Unfrozen water content, Glacial hydrology, Echo sounding, Subglacial beds, Scattering.**

40-427

**Milwaukee prevents pavement scaling.**

Goeb, E., *Concrete construction*, May 1985, 30(5), p.431-436.

**Pavements, Concrete durability, Freeze thaw cycles, Winter maintenance, Road maintenance, Air entrainment, Damage, Chemical ice prevention, Salting.**

40-428

**Derivation of the proportional relation between released latent heat contents and cooling rates from drop-freezing experiments.**

Yang, I.K., *Journal de recherches atmosphériques*, Oct.-Dec. 1984, 18(4), p.281-284, With French summary, 3 refs.

**Freezing, Cooling, Latent heat, Thermodynamics, Freeze thaw cycles, Electromagnetic properties, Experimentation.**

40-429

**Significance of ground freezing on soil bulk density under zero tillage.**

Kay, B.D., et al, *Soil Science Society of America Journal*, July-Aug. 1985, 49(4), p.973-978, 13 refs.

**Grant, C.D., Groenewelt, P.H. Soil freezing, Soil compaction, Density (mass/volume), Settlement (structural), Soil water, Seasonal freeze thaw, Frost penetration, Ice lenses.**

40-430

**Ice plug anchor—development of a new anchor for use in snow and ice.**

Maidl, B., et al *Arctic news record*, Apr. 1985, 4(1), p.34-40, 7 refs.

**Brühl, H. Anchors, Snow mechanics, Ice mechanics, Strains, Static loads, Snow (construction material), Antarctica—Georg von Neumayer Station.**

A new anchor for snow and ice that shows greater resistance to extraction than commonly used screw or dead-man anchors has been developed. At Georg von Neumayer Station test programs were undertaken in 1981 and 1983 investigating construction, technique of installation and load capacity of this anchor. The results lead to a nomogram determining the permissible load and time to failure of the ice plug anchor with regard to construction parameters. A comparison to screw and dead-man anchors established the feasibility of using ice plug anchors in polar snow. Ice plug anchors boasted higher load capacity, less strain and a longer time to failure. This report shows test arrangements and results. (Auth.)

40-431

**Hydrogeology and engineering geology. (Gidrogeologiya i inzhenernaya geologiya).**

Tkachuk, F.I., ed, Novocherkassk, 1978, 136p., In Russian. For selected papers see 40-432 and 40-433.

**Rels. passim. DLE GB1004 G53 Permafrost hydrology, Artesian water, Water intakes, Taliks, Gravel, Sands.**

- 40-432**  
Conditions of ground water distribution in the western section of the BAM development zone. (Usloviia rasprostraneniia podzemnykh vod v zone osvoeniia zapadnogo uchastka BAM), Didenkov, I.U.N., Gidrogeologiya i inzhenernaia geologiya (Hydrology and engineering geology) edited by E.I. Tkachuk, Novocherkassk, 1978, p.49-52, In Russian. 3 refs.  
Artesian water, Permafrost hydrology, Water intakes, Taliks, Sands, Ground water, Gravel.
- 40-433**  
Classification of engineering and geological conditions of construction on the BAM zone sediments. (K probleme tipizatsii inzhenerno-geologicheskikh uslovii stroitel'stva (na primere otlozhenii zony Balka-Amurskoi magistrali) edited by E.I. Tkachuk, Koff, G.L., et al, Gidrogeologiya i inzhenernaia geologiya (Hydrology and engineering geology) edited by E.I. Tkachuk, Novocherkassk, 1978, p.52-58, In Russian. 4 refs.  
Kolomenskii, E.N.  
Swamps, Permafrost distribution, Peat, Permafrost hydrology, Thermokarst, Frost mounds, Naleds, Engineering geology.
- 40-434**  
Formation of settlement properties of loess, containing eolian dust, under present conditions of Central Asia. (Formirovanie pri sadochnykh svotstv lessov iz eolovoi pyli v sovremennykh usloviakh Srednei Azii), Minervin, A.V., Inzhenernaia geologiya, May-June 1979, No.3, p.78-85, In Russian. 21 refs.  
Loess, Eolian soils, Origin, Freeze thaw cycles, Clay soils, Settlement (structural), Frozen rock strength, Tests, Laboratory techniques.
- 40-435**  
Stefan's problem in a finite domain with constant boundary and initial conditions: analysis. Takagi, S., U.S. Army Cold Regions Research and Engineering Laboratory, June 1985, SR 85-08, 28p., ADA-158 558, 13 refs.  
Frost heave, Boundary layer, Stefan problem, Analysis (mathematics).  
Stefan's problem in a finite domain is solved under constant boundary and initial conditions. Starting in a semi-infinite domain, the solution passes infinitely many stages of lead times in a finite domain and finally becomes stationary. The singularity at the finite terminal necessitates introduction of lead times including lead times, parameters defining the solution vary with time. Only the analytical result is reported in this paper.
- 40-436**  
Phenomenological description of rock strength. (K fenomenologicheskomu opisaniiu prochnostnykh svoystv gornykh porod), Ben'kov, V.N., Fiziko-tehnicheskie problemy razrabotki poleznykh iskopaemykh, Jan.-Feb. 1979, No.1, p.15-21, In Russian. 10 refs.  
Fracture zones, Frozen rock strength, Ground water, Igneous rocks, Freeze thaw cycles, Diabase.
- 40-437**  
Determining ground water balance in paludal industrial areas. (Opredelenie balansa gruntovykh vod na podtaplivaemykh promyshlennakhakh), Garmonov, I.V., et al, Razvedka i okhrana nedr, Feb. 1979, No.2, p.40-43, In Russian. 4 refs.  
Domrachev, G.I., Grishina, I.N.  
Buildings, Foundations, Clays, Paludification, Water table, Snow cover effect, Meltwater, Analysis (mathematics).
- 40-438**  
Characteristics of variation of meteorological elements in Eczurra Inlet during the Polish Academy of Sciences' 2nd Antarctic Expedition from Dec. 20, 1977, to Mar. 16 1978. Kowalewski, J., et al, Oceanologia, 1983 (Pub. 1984), Vol.15, p.7-19, With Polish summary. 4 refs.  
Wielbinska, D.  
Sea ice distribution, Antarctica—King George Island. Meteorological observations carried out during the austral summer 1977-1978 at the Arctowski Station, on King George I., and from a ship anchored in Eczurra Inlet are reported. A synoptic weather map for Feb. 6th is shown. Data is presented, and discussed, on atmospheric pressure and temperature, wind direction and speed, relative humidity, visibility, precipitation, surface water temperature, and sea ice distribution.
- 40-439**  
Effect of nonuniform size on internal stresses in a rapid, simple shear flow of granular materials. Part 2. Multiple grain sizes. Shen, H.H., U.S. Army Cold Regions Research and Engineering Laboratory, Feb. 1985, CR 85-03, 20p., ADA-154 046, 19 refs.  
Shear flow, Particle size distribution, Microstructure, Stresses, Materials, Shear stress, Granular materials, Slurries.  
In the past all theoretical analyses for rapidly sheared granular flows assumed that the granular solids are either disks or spheres and are uniform in size. However, natural materials that create these granular flows are in general irregular in shape and have various spectra of sizes. The stress and rate of energy dissipation levels in granular flows are significantly influenced by the size distribution. In part 1 of this report series (see 40-38, CR 85-2) the formulation of the constitutive equations considering a two-size granular mixture is presented, where the ratio of the two sizes is nearly one. Here, in part 2, the constitutive equations for a two-size mixture are extended to include a general size ratio. In addition, a complete spectrum of size distribution is incorporated, which allows the quantification of the size distribution effect in the most general way. In analyzing the stresses, intergranular collision is assumed to be the major dynamic activity at the microscopic level. Because of the present limited knowledge of treating shape effects, the analysis is confined to the flow of either disks or spheres. The result of this work provides necessary information for a more realistic analysis of natural and industrial granular flows.
- 40-440**  
Reconnaissance observations of long-term natural vegetation recovery in the Cape Thompson region, Alaska, and additions to the checklist of flora. Everett, K.R., et al, U.S. Army Cold Regions Research and Engineering Laboratory, June 1985, CR 85-11, 75p., ADA-158 724, Refs. p.44-48.  
Murray, B.M., Murray, D.F., Johnson, A.W., Linkins, A.E., Webber, P.J.  
Revegetation, Tundra, Permafrost, Soil erosion, Environmental protection, Active layer, Vegetation, Frost action, Classifications, Landforms, Environmental impact.  
The diversity of disturbance types, landforms, vegetation and soils, together with the large, well-documented flora, makes Cape Thompson an ideal site to study long-term (20-year) environmental adjustments after impact. Man-caused disturbances there between 1958 and 1962 fall into three categories: runways, excavations and off-road vehicle trails. In addition, natural disturbance by frost action creates scars. Reestablished vegetation after 20 years consisted of species found in adjacent undisturbed landscapes.
- 40-441**  
Arctic underplinnings—permafrost. Nygaard, E., Science dimension, 1982, 14(5/6), p.8-15, In English and French.  
Permafrost beneath structures, Permafrost distribution, Permafrost physics, Ground thawing, Ground ice, Pingos, Landslides, Underground pipelines, Environmental impact.
- 40-442**  
Modelling the time-dependent behaviour of ice. Szyzkowski, W., et al, Cold regions science and technology, July 1985, 11(1), p.3-21, 20 refs.  
Glockner, P.G.  
Ice creep, Stress strain diagrams, Ice loads, Ice structure, Brittleness, Viscoelastic materials, Mathematical models, Temperature effects, Time factor.
- 40-443**  
Snow in strong or weak temperature gradients. Part 1: experiments and qualitative observations. Perla, R., et al, Cold regions science and technology, July 1985, 11(1), p.23-35, 52 refs.  
Ommanney, C.S.L.  
Snow morphology, Metamorphism (snow), Snow density, Snow crystal structure, Snow crystal growth, Snow pellets, Temperature gradients, Grain size.
- 40-444**  
Freezing degree-days in New York state. Schmidlin, T.W., et al, Cold regions science and technology, July 1985, 11(1), p.37-43, 14.  
Dethier, B.E.  
Air temperature, Degree days, Ice cover thickness, Ice breakup, Frost penetration, Altitude, Statistical analysis, United States—New York.
- 40-445**  
Simulated physical effects of shallow soil heat extraction. Lundin, L.-C., Cold regions science and technology, July 1985, 11(1), p.45-61, 21 refs.  
Soil temperature, Heat recovery, Heat transfer, Mass transfer, Heat sources, Models, Tensile properties, Water content, Frost penetration.
- 40-446**  
Stress concentrations in the root of an ice cover cantilever: model tests and theory. Svec, O.J., et al, Cold regions science and technology, July 1985, 11(1), p.63-73, 5 refs.  
Thompson, J.C., Frederking, R.M.W.  
Ice cover strength, Stresses, Flexural strength, Models, Cantilever beams.
- 40-447**  
Prevention of icing by freezing point depressant systems. Jellinek, H.H.G., et al, Cold regions science and technology, July 1985, 11(1), p.75-85, 1 ref.  
Kachi, H., Tushima, K.  
Antifreezes, Icing, Surface temperature, Chemical ice prevention, Humidity, Absorption, Countermeasures, Equipment, Heat transfer.
- 40-448**  
Modelling frazil ice and grease ice formation in the upper layers of the ocean. Omstedt, A., Cold regions science and technology, July 1985, 11(1), p.87-98, 27 refs.  
Frazil ice, Ice formation, Sea ice, Mass transfer, Boundary layer, Mathematical models, Turbulent flow, Supercooling, Meteorological data, Salinity.
- 40-449**  
Ettringite-like phases in strong chloride-containing old cement stone and concrete. (Ettringit-ähnliche Phasen in stark chloridhaltigem, altem Zementstein und Beton), Volkwein, A., Tonindustrie Zeitung, 1979, 103(9), p.530-531, In German.  
Salting, Concrete freezing, Frost shattering, Bridges, Chemical ice prevention, Damage.
- 40-450**  
Icing of gas turbine compressors and ways of achieving uninterrupted operation. Kovács, P., et al, Brown Boveri review, Apr. 1985, 72(4), p.172-177, 17 refs.  
Stoff, H.  
Icing, Equipment, Compressors, Gases, Ice forecasting, Ice detection, Heat transfer, Countermeasures, Computer applications, Condensation, Supercooling.
- 40-451**  
On morphological stability of planar phase boundaries during unidirectional transient solidification of binary aqueous solutions. Wollhöver, K., et al, International journal of heat and mass transfer, May 1985, 28(5), p.897-902, With French, German and Russian summaries. 18 refs.  
Scheiwe, M.W., Hartmann, U., Körber, C.  
Solutions, Freezing, Heat transfer, Mass transfer, Boundary layer, Phase transformations, Salinity, Stability, Analysis (mathematics).
- 40-452**  
Shipping crisis in the Soviet eastern Arctic at the close of the 1983 navigation season. Barr, W., et al, Arctic, Mar. 1985, 38(1), p.1-17, With French summary. 54 refs.  
Wilson, E.A.  
Ice navigation, Icebreakers, Marine transportation.
- 40-453**  
Identification of environmental disturbances from road development: in subarctic muskeg. Pomeroy, J.W., Arctic, June 1985, 38(2), p.104-111, With French summary. 22 refs.  
Permafrost beneath roads, Muskeg, Environmental impact, Discontinuous permafrost, Vegetation, Hydrology, Design, LANDSAT.
- 40-454**  
Ice in the Taurus molecular cloud: modelling of the 3-micron profile. Van der Bult, C.E.P.M., et al, Royal Astronomical Society. Monthly notices, May 15, 1985, 214(2), p.289-305, 20 refs.  
Greenberg, J.M., Whittet, D.C.B.  
Extraterrestrial ice, Ice optics, Molecular structure, Grain size, Models, Planetary environments, Cloud physics, Cosmic dust.
- 40-455**  
Acoustic response of a periodically rough elastic plate (ice) in contact with water. Lakhtakia, A., et al, Journal of applied mechanics, Mar. 1985, 52(1), p.144-148, 14 refs.  
Varadan, V.K., Varadan, V.V.  
Ice water interface, Ice acoustics, Wave propagation, Surface roughness, Acoustic scattering, Analysis (mathematics).

- 40-456**  
Iceberg drop, dump, and grounding structures from Pleistocene glaciolacustrine sediments, Scotland. Thomas, G.S.P., et al. *Journal of sedimentary petrology*, Mar. 1985, 55(2), p.243-249, 24 refs. Connell, R.J.
- 40-457**  
Icebergs, Ice scoring, Glacial deposits, Lacustrine deposits, Grounded ice, Pleistocene, Paleoclimatology, Glacial geology, United Kingdom—Scotland.
- 40-458**  
Secondary hydrogen-bonding effects on the nuclear magnetic shielding of the hydrogen nuclei in ice: an ab initio quantum-mechanical study. Hinton, J.F., et al. *Chemical physics letters*, May 10, 1985, 116(4), p.292-294, 20 refs. Bennett, D.L.
- 40-459**  
Ice physics, Hydrogen bonds, Ice nuclei, Anisotropy, Nuclear magnetic resonance.
- 40-460**  
Kinetics of proton transfer in ice via the pH-jump method: evaluation of the proton diffusion rate in polycrystalline doped ice. Pines, E., et al. *Chemical physics letters*, May 10, 1985, 116(4), p.295-301, 24 refs. Huppert, D.
- 40-461**  
Ice physics, Proton transport, Ice crystal structure, Doped ice, Ion diffusion.
- 40-462**  
Observations of a peculiar form of hoarfrost on wires: what is the explanation. (Observation d'une forme particulière de givre sur des câbles: Quelle explication?). Personne, P., et al. *Journal de recherches atmosphériques*, July-Sep. 1984, 18(3), p.205-208, 19 refs. French, 1 ref. Peigney, L., Soulage, M., Soulage, R.G.
- 40-463**  
Hoarfrost, Snow pellets, Power line icing, Wire.
- 40-464**  
Snow cover data, winter 1983-84, Downsview, Ontario, Atmospheric Environment Service, 1984, 45p. Snow cover distribution, Snow depth, Snow water equivalent, Statistical analysis, Seasonal variations.
- 40-465**  
Possible importance of ozone in ice formation in clouds. Gzirishvili, T.G., et al. *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1977, 13(1), p.69-70, Translated from *Izvestiya. Fizika atmosfery i okeana*. 6 refs. Kharchilava, D.F.
- 40-466**  
Cloud physics, Aerosols, Ice formation, Ice nuclei, Freezing nuclei, Cloud seeding, Hallstone growth.
- 40-467**  
Thermal state of the boundary layer of cooling water in transition from free to forced convection. Ginzburg, A.I., et al. *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1979, No. 7, p.551-555, Translated from *Izvestiya. Fizika atmosfery i okeana*. 14 refs. Fedorov, K.N.
- 40-468**  
Boundary layer, Air water interactions, Convection, Cooling rate, Heat transfer, Turbulence, Wind factors, River water.
- 40-469**  
Glaciers, Ice sheets and sea level: effects of a CO<sub>2</sub>-induced climatic change. National Research Council. Polar Research Board. Ad Hoc Committee on the Relationship between Land Ice and Sea Level, Washington, D.C., National Academy Press, 1985, 330p., Report of a workshop held in Seattle, Sep., 1984. For selected papers see 40-464 through 40-482 or 1-32440 through 1-32447 and J-32439. Numerous refs.
- 40-470**  
Meetings, Ice sheets, Sea level, Climatic changes. The consensus of the Workshop is that sea level is rising, but the rate of rise is uncertain by a factor of 2, wastage of mountain glaciers and small ice caps contributes to this rise, probably very little if any sea-level change is caused by wastage of the Greenland Ice Sheet, and the Antarctic Ice Sheet is most likely growing, taking water out of the sea. The rate of change of mass of the ocean cannot be distinguished from zero. Whether the present rise in sea level can be adequately accounted for by just thermal expansion of ocean water is an open question. Future projections suggest that, in spite of increased precipitation, wastage of small glaciers and the Greenland Ice Sheet will add mass to the ocean; the resulting sea-level rise due to this cause likely will be a few tenths of a meter by the year 2100. The sea-level rise due to changes in Antarctica is more uncertain, most likely it will be small, but a rise of an appreciable fraction of a meter by 2100 due to increased discharge of land ice to the sea is not beyond the realm of possibility. The workshop participants accepted the importance of several general goals as essential to improvement in our ability to understand and predict sea-level change in the next century. (Auth.)
- 40-471**  
Oceanographic evidence for land/ocean interactions in the southern ocean. Jacobs, S.S., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.116-128, Refs. p.125-128. Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-472**  
Ice shelves, Ocean currents, Sea water, Chemical composition, Sea ice. Various factors are cited as evidence of the interactionary nature of the relationships between land and water and these are discussed. Among the factors are: the salinity of the continental shelf; glacier meltwater in ice shelf water; temperature of the sea water beneath the ice shelf; impurities in sea water derived from the atmosphere; effects of icebergs, and sea water circulation under the shelves.
- 40-473**  
Mass balance of the glaciers and small ice caps of the world. Meier, M.F., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.139-144, 5 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-474**  
Glacier ice, Glacier mass balance, Glacier oscillation.
- 40-475**  
Canadian Arctic islands: glacier mass balance and global sea level. Koerner, R.M., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.145-154, 21 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-476**  
Glacier mass balance, Sea level, Ice sheets, Glacier thickness, Canada—Northwest Territories—Canadian Archipelago.
- 40-477**  
Greenland ice-sheet mass balance and sea-level change. Reeh, N., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.155-171, 35 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-478**  
Glacier mass balance, Ice sheets, Sea level, Glacial hydrology, Greenland.
- 40-479**  
State of balance of the antarctic ice sheet, an updated assessment 1984. Budd, W.F., et al. Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.172-177, 27 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-480**  
Smith, I.N. Ice sheets, Mass balance, Flow rate. In early assessments of the mass balance of the Antarctic one of the large unknowns that was thought could contribute to greater loss and therefore a closer state of balance was the possible existence of large melt rates under the large ice shelves. The subsequent studies of the Amery Ice Shelf have shown that large net losses do not occur there and significant basal growth occurs far inland of the front. A second source of error in the early estimates was the lack of direct measurements of outflow glacier velocities or ice thickness and the consequent use of analogy arguments to estimate the total flux based on the few observed glaciers. The third major source of error was the sparsity of data on net accumulation over the interior of the Antarctic, particularly over central east Antarctica. These errors are rectified in this new assessment. (Auth. mod.)
- 40-481**  
Glaciological evidence: the Ross Sea Sector. Bentley, C.R., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.178-196, 30 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-482**  
Ice shelves, Ice cover thickness, Mass balance, Periodic variations, Antarctica—Ross Sea, Antarctica—West Antarctica. The Ross Ice Shelf Geophysical and Glaciological Survey (RIGGS) airborne radar sounding in West Antarctica, and shipboard echo sounding in the Ross Sea have made it possible to draw a subglacial and submarine topographic map of the entire "Ross Embayment". The unbroken continuity of the subglacial and submarine topography across the West Antarctic ice sheet grounding line shows that the position of the grounding line is largely determined by ice-sheet dynamics and the heights of sea level and is, therefore, easily subject to change in time. After combining evidence from the distribution of bottom crevasses found by analysis of radar data, from ice and water layer thicknesses, and from surface crevassing, it is concluded that there are six additional sites of grounded ice on the ice shelf—all in the grid western sector and generally associated with known areas of shallow water. It is widely believed that areas of grounded ice may play a central role in stabilizing the ice sheet by acting as "pinning points" in the ice shelf. These possibilities are examined and discussed. (Auth.)
- 40-483**  
Antarctic mass balance: glaciological evidence from Antarctic Peninsula and Weddell Sea sector. Doake, C.S.M., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.197-209, 17 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-484**  
Ice shelves, Mass balance, Ice edge, Sea water, Chemical composition, Climatic changes, Antarctica—Antarctic Peninsula, Antarctica—Weddell Sea. Following a general description of the geographical setting and prominent physical characteristics of the region, discussions are given of mass balance and the ice front movement. Effects of the sea beneath ice shelves are pointed out and particularly those on the Ronne and Filchner shelves. The status of unstable Pine Island Glacier is given and climate trends in the region are noted. It is concluded that, while quantitative estimates cannot be made of net gain or loss in mass balance, the data suggest a net loss has been realized over the last few years.
- 40-485**  
Iceberg discharge and the mass balance of Antarctica. Orheim, O., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.210-215, 11 refs. Also published in *Iceberg research*, Oct. 1984, No. 8, p.3-7. Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-486**  
Icebergs, Mass balance, Ice volume. Results are reported of a systematic survey conducted under the auspices of the SCAR Working Group on Glaciology to collect iceberg data from the southern ocean. Ships transiting or working in antarctic waters were asked to describe, according to a standardized observational schedule, all icebergs within their sighting areas. Observational data from this survey have been analyzed and statistics are given of the total number of icebergs seen, classed as to size. Ice volume is calculated.
- 40-487**  
Global land-ice monitoring: present status and future perspectives. Haeberli, W., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.216-231, Refs. p.228-231. Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-488**  
Glacier mass balance, Glacier oscillation, Remote sensing, Statistical analysis, Monitors.
- 40-489**  
Monitoring the area and volume of ice caps and ice sheets: present and future opportunities using satellite remote-sensing technology. Williams, R.S., Jr., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.232-240, Refs. p.237-240. Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-490**  
Monitors, Glaciers, Glacier oscillation, Ice volume, Remote sensing, Spacecraft.
- 40-491**  
Snow cover, sea ice, and permafrost. Barry, R.G., Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change, Washington, D.C., National Academy Press, 1985, p.241-247, 11 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.
- 40-492**  
Snow cover, Sea ice distribution, Permafrost, Variations.

## 40-475

**Responses of mid-latitude glacier mass balance to predicted climatic changes.**

Kuh, M., *Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change*, Washington, D.C., National Academy Press, 1985, p.248-254, 5 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.

**Glacier mass balance, Mountain glaciers, Atmospheric composition, Carbon dioxide, Climatic changes.**

## 40-476

**Shift of equilibrium-line altitude on the Greenland Ice Sheet following climatic changes.**

Ambach, W., et al., *Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change*, Washington, D.C., National Academy Press, 1985, p.255-257, 4 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.

**Ice sheets, Ice melting, Heat balance, Climatic changes, Greenland.**

## 40-477

**Contribution of the Greenland ice cap to changing sea level: present and future.**

Bindschadler, R.A., *Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change*, Washington, D.C., National Academy Press, 1985, p.258-266, 9 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.

**Ice sheets, Mass balance, Air temperature, Climatic changes, Models, Greenland.**

## 40-478

**Numerical simulation of CO<sub>2</sub>-induced transient climate change with a coupled atmosphere-ocean general circulation model.**

Schlesinger, M.E., *Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change*, Washington, D.C., National Academy Press, 1985, p.267-274, 19 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.

**Carbon dioxide, Climatic changes, Atmospheric circulation, Simulation.**

## 40-479

**"Ice pump," a mechanism for ice shelf melting.**

Lewis, E.L., *Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change*, Washington, D.C., National Academy Press, 1985, p.275-278, 4 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.

**Ice shelves, Ice melting, Heat transfer, Antarctica—McMurdo Sound.**

An explanation is given as to how polar waters at depth are supercooled *vis à vis* the *in situ* freezing point as they rise to the surface and cause ice growth in the water column. Descending waters are warm and tend to melt the ice at depth. A schematic of the process is shown and an example of the upwelling in McMurdo Sound is given. This situation may operate in the Sound but it seems unlikely that it will throughout the Ross Ice Shelf.

## 40-480

**Ice shelves and ice streams: three modeling experiments.**

Fastook, J.L., *Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change*, Washington, D.C., National Academy Press, 1985, p.279-300, 22 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.

**Ice shelves, Glacier ice, Ice models.**

Three fundamentally different modeling approaches are discussed and their implications concerning the near future are considered. The first is a finite-difference model that focuses on the marine instability. The second is a plane-strain finite-element analysis of the stress distribution that occurs in an ice shelf due to the unbalanced hydrostatic forces at the front. The third is a fully time-dependent, finite-element flow-line reconstruction model used to investigate the formation of an ice stream in a region originally dominated by sheet flow. (Auth mod.)

## 40-481

**Responses of the polar ice sheets to climatic warming.**

Thomas, R.H., *Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change*, Washington, D.C., National Academy Press, 1985, p.301-316, 6 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.

**Ice shelves, Ice mechanics, Climatic changes, Ice sheets, Ice models, Antarctica.**

This document presents an assessment of possible responses by the antarctic ice sheet to a climate warming associated with increasing concentrations in the atmosphere of greenhouse constituents such as CO<sub>2</sub> and methane. Increased ice drainage from West Antarctica is generally identified as the most probable cause for a major increase in sea level if global climate becomes appreciably warmer. Potential outlets for the ice are the Pine Island and Thwaites glaciers and the great embayments containing the Ross and Filchner/Ronne Ice Shelves. In addition, parts of the East Antarctic ice sheet grounded more than 0.5 km below sea level may also be vulnerable to increased discharge. A quantitative assessment of these responses over the next century is hindered by lack of both data and understanding of the physical processes that might operate. Nevertheless, a simple model to describe the initial response of Antarctic outlet glaciers and ice streams to warming climate is formulated and used to estimate upper limits to increased ice discharge during the next century. (Auth.)

## 40-482

**Model of a polar ice stream, and future sea-level rise due to possible drastic retreat of the West Antarctic Ice Sheet.**

Lingle, C.S., *Glaciers, ice sheets, and sea level: effects of a CO<sub>2</sub>-induced climatic change*, Washington, D.C., National Academy Press, 1985, p.317-330, 32 refs., Report on a workshop, Seattle, Sep., 1984, prepared by National Research Council, Polar Research Board, Ad Hoc Committee on the Relationship between Land Ice and Sea Level.

**Ice sheets, Glacier flow, Sea level, Ice models, Carbon dioxide, Antarctica—West Antarctica, Antarctica—Ross Ice Shelf.**

In this paper a brief review of field results from RIGGS (Ross Ice Shelf Glaciological and Geophysical Survey) is given. The analyses based on field measurements are interpreted in terms of the probable future behavior of the West Antarctic ice sheet upglacier (northeast) from Roosevelt Island. This interpretation is based on an assumption that climatic warming caused by increasing carbon dioxide in the atmosphere will not significantly alter the state of the Ross Ice Shelf as measured during RIGGS. Modeling results indicating the possibility of ground-ice-line retreat in the event that climatic warming causes increased basal melting below the Ross Ice Shelf are also described. A minimum time is suggested for drastic retreat of the West Antarctic ice sheet in the event that warming is sufficient to cause extreme thinning of the ice shelf. An estimate for the corresponding rate of sea-level rise is given. (Auth.)

## 40-483

**Corrosion of reinforcing steel bars in concrete.**

Tripler, A.B., et al., *National Association of Corrosion Engineers, 24th Conference. Proceedings*, 1969, p.322-333, 24 refs.

Boyd, W.K.

**Corrosion, Reinforced concretes, Salting, Steels, Chemical ice prevention, Damage, Measurement.**

## 40-484

**On the polynyas in the mouth of Scoresby Sound.**

Et polynier i mundingen af Scoresby Sund, Born, E.W., *Grønland*, Nov. 1984, 32(8-9), p.259-268, In Danish.

**Polynyas, Marine biology, Sea ice, Greenland—Scoresby Sound.**

## 40-485

**Time dependent tilt of a 20 m deep firn pit.**

Eisner, H., et al., *Polarforschung*, 1984, 54(2), p.85-93, In English with German summary. 6 refs.

Ambach, W., Schneider, H.

**Firn, Deformation, Rheology, Strains.**

## 40-486

**Frost dynamics and permafrost in ice-free regions of the Antarctic Peninsula.**

Frostdynamik und Permafrost in eisfreien Gebieten der Antarktischen Halbinsel, Barsch, D., et al., *Polarforschung*, 1984, 54(2), p.111-119, In German with English summary. 18 refs.

Stäblein, G.

**Frozen ground mechanics, Continuous permafrost, Periglacial processes, Antarctica—King George Island.**

From field studies of periglacial relief forms (frost patterns, frost slopes and rock glaciers) and climatic data of the frost climate in the area of the Antarctic Peninsula and its surroundings, it is shown that continuous permafrost already occurs at a mean annual air temperature of -2°C. A freezing depth of 200 cm and a thawing depth of 110 cm are calculated for Fildes Peninsula on King George Island; there the annual minima of temperatures reach values of only -20°C. In the lower oceanic Antarctic

where special climatic conditions are found, a special type of periglacial geosystem exists with geomorphic affected cryodynamics. The approaches to regional modelling are to be further developed because the theories of periglacial arctic environments are not sufficient for regional explanation in the periglacial Antarctic. (Auth.)

## 40-487

**Modifications of skin surface temperatures during the acclimatization process in Antarctica.**

Veränderungen der Hauttemperaturen während des Akklimatisationsprozesses in der Antarktis, Höpfe, P., et al., *Polarforschung*, 1984, 54(2), p.121-125, In German with English summary. 12 refs.

Kipfstuhl, J.

**Low temperature tests, Acclimatization, Physiological effects.**

During a whole year in Antarctica the skin temperatures of two test subjects were measured at 4 locations in the morning and in the evening. In the first phase of the stay in Antarctica a decrease of the mean skin temperature was found, while after about 100 days a steady increase started. These changes of the mean skin temperatures are predominantly caused by changes of the skin temperatures of the extremities. (Auth.)

## 40-488

**Development of iceberg research and its possible applications.**

Die Entwicklung der Eisberg-Forschung und ihre eventuelle Anwendung, Schwerdtfeger, P., *Polarforschung*, 1984, 54(2), p.127-132, In German with English summary. 35 refs.

**Icebergs, Low temperature research, Research projects.**

Antarctic icebergs were long cautiously avoided and rarely scientifically examined. With the recognition of their potential as valuable sources of fresh water and energy, a dramatic surge of interest was manifested by investigators representing a multiplicity of disciplines. The practical application of this natural resource now depends only on politically and economically based decisions. (Auth.)

## 40-489

**Sensitivity of an energy balance climate model with predicted snowfall rates.**

Bowman, K.P., *Tellus*, May 1985, 37A(3), p.233-248, 28 refs.

**Mathematical models, Solar radiation, Snow cover, Snowfall, Ice sheets, Climatic changes.**

## 40-490

**Effects of deicing chemicals on ground and surface water.**

Über den Einfluss der Tausalze auf Grund- und Oberflächenwasser, Bischofsberger, W., *Strassen- und Tiefbau*, June 1985, 39(6), p.6-10, In German with English summary, p.3. 2 refs.

**Salting, Soil pollution, Road maintenance, Chemical ice prevention, Water pollution, Winter maintenance, Environmental impact.**

## 40-491

**Asphalt pavements on European runways.**

Asphaltdeckschichten auf Roll- und Startbahnen in Europa, Hiersche, E.-U., *Strassen- und Tiefbau*, June 1985, 39(6), p.20-23, In German with English summary, p.3. 2 refs.

**Aircraft landing areas, Chemical ice prevention, Runways, Pavements, Pollution, Skid resistance, Bitumens, Safety.**

## 40-492

**Highway load restriction determination.**

Leonard, L., *Alaska. Department of Transportation and Public Facilities. Research notes*, May 1982, 2p.

**Frost heave, Pavements, Seasonal freeze thaw, Cracking (fracturing), Damage, Thaw depth, Bearing strength, Trafficability.**

## 40-493

**Solar assisted culvert thawing device.**

Sweet, L., *Alaska. Department of Transportation and Public Facilities. Research notes*, July 1982, 2(1), 2p.

**Culverts, Freezing, Ice melting, Freeze thaw cycles, Heating, Countermeasures.**

## 40-494

**High-speed gravel roads.**

Reckard, M., *Alaska. Department of Transportation and Public Facilities. Research notes*, Nov. 1982, 2(5), 2p.

**Permafrost beneath roads, Gravel, Permafrost preservation, Pavements, Construction materials.**

## 40-495

**CMA—an alternative road deicer.**

McHattie, R.L., *Alaska. Department of Transportation and Public Facilities. Research notes*, Jan 1983, 2(7), 2p.

**Salting, Chemical ice prevention, Damage, Corrosion, Pollution, Cost analysis, Countermeasures.**

- 40-496**  
Bridge deck corrosion.  
Powers, S., Alaska. *Department of Transportation and Public Facilities. Research notes*, Apr. 1983, 2(10), 2p.
- 40-497**  
Corrosion, Reinforced concretes, Bridges, Salting, Cracking (fracturing), Concrete strength, Steels, Countermeasures, Leaching, Brines.
- 40-498**  
Progress in Alaskan pavement design.  
McHattie, R.L., Alaska. *Department of Transportation and Public Facilities. Research notes*, Aug. 1983, 3(2), 2p.
- 40-499**  
Freeze thaw cycles, Pavements, Bituminous concretes, Ground thawing, Design.
- 40-500**  
Air duct ground stabilization system.  
Connor, B., Alaska. *Department of Transportation and Public Facilities. Research notes*, Sep. 1983, 3(3), 2p.
- 40-501**  
Permafrost beneath roads, Soil stabilization, Ducts, Embankments, Ground thawing, Thaw weakening, Permafrost preservation, Settlement (structural), Tests.
- 40-502**  
Frost heave prediction—Lake Hood test site.  
Esch, D.C., Alaska. *Department of Transportation and Public Facilities. Research notes*, Dec. 1983, 3(6), 2p.
- 40-503**  
Frost heave, Frost forecasting, Thaw weakening, Roads, Settlement (structural), Tests, Soil temperature, Water temperature.
- 40-504**  
Thermal and lighting standard for Alaska.  
Leonard, L.E., Alaska. *Department of Transportation and Public Facilities. Research notes*, Jan. 1984, 3(7), 2p.
- 40-505**  
Building codes, Thermal effects, Illuminating, Buildings, Standards, Climatic factors.
- 40-506**  
CMA—an alternative road de-icer; summary and continuation of research.  
McHattie, R.L., Alaska. *Department of Transportation and Public Facilities. Research notes*, Feb. 1984, 3(8), 2p.
- 40-507**  
Chemical ice prevention, Road maintenance, Anti-freezes, Winter maintenance, Corrosion, Damage, Environmental impact, Pollution, Tests.
- 40-508**  
Hot sand for icy roads.  
Reckard, M., Alaska. *Department of Transportation and Public Facilities. Research notes*, Mar. 1984, 3(9), 2p.
- 40-509**  
Road icing, Ice removal, Sands, Winter maintenance, Chemical ice prevention, Countermeasures, Temperature effects, Safety, Tests.
- 40-510**  
Total cost of road deicing.  
Miller, R.E., Alaska. *Department of Transportation and Public Facilities. Research notes*, May 1984, 3(11), 2p.
- 40-511**  
Salting, Cost analysis, Corrosion, Chemical ice prevention, Damage.
- 40-512**  
Thermal cracking of asphalt pavements.  
McHattie, R.L., Alaska. *Department of Transportation and Public Facilities. Research notes*, Sep. 1984, 4(3), 2p.
- 40-513**  
Pavements, Freeze thaw cycles, Cracking (fracturing), Settlement (structural), Road maintenance, Construction materials, Countermeasures, Temperature effects.
- 40-514**  
Performance of buried insulation layers.  
Esch, D.C., Alaska. *Department of Transportation and Public Facilities. Research notes*, Dec. 1984, 4(6), 2p.
- 40-515**  
Permafrost beneath roads, Thermal insulation, Frost heave, Settlement (structural), Aircraft landing areas, Countermeasures, Runways, Thermal conductivity, Water content.
- 40-516**  
White paint for highway thaw settlement control.  
Reckard, M.K., Alaska. *Department of Transportation and Public Facilities. Research notes*, Jan. 1985, 4(7), 2p.
- 40-517**  
Permafrost beneath roads, Ground thawing, Settlement (structural), Frozen ground settling, Solar radiation, Road maintenance, Protective coatings.
- 40-518**  
Frost heave forces on piling.  
Esch, D.C., et al., Alaska. *Department of Transportation and Public Facilities. Research notes*, May 1985, 4(11), MP 1732, 2p.
- 40-519**  
Frost heave, Pile extraction, Pile structures, Loads (forces), Frost penetration, Frozen ground mechanics, Soil creep, Soil physics, Design, Tests.
- 40-520**  
Seward Highway avalanche data base.  
Fredston, J.A., et al., Alaska. *Department of Transportation and Public Facilities. Research notes*, Sep. 1985, 5(3), 2p.
- 40-521**  
Sweet, L.P.
- 40-522**  
Avalanche formation, Roads, Avalanche forecasting, Snow cover stability, Safety, Weather observations, Countermeasures, Design criteria.
- 40-523**  
Canadian sea ice guide—an overview.  
Harmon, D.J., et al., *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-CORE publication*, 1983, No 84-11, 8p., 2 refs.
- 40-524**  
Roche, M.C., Ruck, C.G.
- 40-525**  
Sea ice distribution, Ice conditions, Ice loads, Off-shore structures, Ice navigation, Ice physics, Design, Canada.
- 40-526**  
Geological and geomorphological activity of fast ice (from studies in the White Sea). [Geologo-geomorfologicheskaya deiatel'nost' priplavnykh ledov (po issledovaniyam v Belom more)], Chuvardinskii, V.G., *Gomorfologiya*, July-Sept. 1985, No.3, p.70-77, In Russian with English summary. 5 refs.
- 40-527**  
Ice erosion, Sea ice distribution, Fast ice, Ice rafting, Littoral zone, Rocks, Pressure ridges.
- 40-528**  
Outline of the Wrangel Island vegetation. [Ocherk rastitel'nosti ostrova Vrangeliya], Petrovskii, V.V., *Botanicheskii zhurnal*, June 1985, 70(6), p.742-751, In Russian with English summary. 8 refs.
- 40-529**  
Deserts, Polygonal topography, Tundra, Plant ecology, Plant physiology, Ecosystems, Mosses, Geocryology, Arctic landscapes, Lichens, Cryogenic structures.
- 40-530**  
Higher aquatic plants of the western foothills of northern Timan. [Vysshie vodnye rasteniya zapadnykh predgor'ii Severnogo Timana], Vekhov, N.V., et al., *Botanicheskii zhurnal*, June 1985, 70(6), p.786-791, In Russian. 6 refs.
- 40-531**  
Lukiev, A.N.
- 40-532**  
Lakes, Biomass, Tundra, Salt water, Aquatic plants, Thermokarst, Subarctic regions.
- 40-533**  
Natural formation of vegetation on sediments affected by industrial activities, in the Far North. [Estestvennoe formirovaniye rastitel'nosti na tekhnogennykh nanosakh v usloviyakh Krainego Severa], Kuz'min, I.U.I., et al., *Botanicheskii zhurnal*, June 1985, 70(6), p.831-835, In Russian. 7 refs.
- 40-534**  
Korel'skaia, V.M.
- 40-535**  
Tundra Tailings, Plant physiology, Revegetation, Ecosystems, Mining, Petroleum industry, Soil pollution, Water pollution.
- 40-536**  
Changes in humidity and density of the seasonally thawing layer in the lower course of Yenisey River, in relation to economic development. [Izmeneniye vlazhnosti i plotnosti sloia sezonnogo ottaivaniya v nizov'yakh r. Enisei v svyazi s khoziaistvennym osvoeniemy], Zamolotichikova, S.A., et al., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya. Izvestiya vysshih uchebnykh zavedenii. Geologiya i razvedka*, July 1985, No.7, p.137-139, In Russian.
- 40-537**  
Vrachev, V.V., Zontov, M.N.
- 40-538**  
Active layer, Permafrost distribution, Frozen fines, Rivers, Freeze thaw cycles, Valleys, Water content, Economic development.
- 40-539**  
Occurrence of mudflow phenomena in Hinducush and Caracorum. [Analiz rasprostraneniya selevykh iavlenii v Gindukushe i Karakorum], Sen'kovskaya, N.F., *Moscow. Universitet. Vestnik. Seriya 5 Geografiya*, July-Aug. 1985, No.4, p.93-99, In Russian. 14 refs.
- 40-540**  
Mapping, Slope processes, Mudflows, Charts, Melt-water, Alpine landscapes, Glacier ice, Glacial lakes, Snow cover distribution, Snowmelt, Snow accumulation.
- 40-541**  
Geophily as a basic trend in ecological evolution of plant biotopes in the Arctic and high-elevation Subarctic areas. [Geofiliya kak odin iz osnovnykh putei ekologicheskoi evoliutsii bimorfnykh rastenii v Arktike i subarkticheskikh vysokogor'iyakh], Khokhriakov, A.P., et al., *Botanicheskii zhurnal*, July 1985, 70(7), p.876-884, In Russian with English summary. Refs. 883-884.
- 40-542**  
Mazurenko, M.T.
- 40-543**  
Plant physiology, Plant ecology, Arctic regions, Alpine landscapes.
- 40-544**  
Seed reserves in the soils of Taymyr tundra and polar deserts of Severnaya Zemlya. [Zapas semian v pochvakh tundr Taymyra i poliarnykh pustyn' Severnoi Zemli], Khodachek, E.A., *Botanicheskii zhurnal*, July 1985, 70(7), p.896-908, In Russian with English summary. 20 refs.
- 40-545**  
Plant ecology, Continuous permafrost, Plant physiology, Plants (botany), Polar regions, Cryogenic soils.
- 40-546**  
Overgrowth and production of macrophytes in some small lakes of southern Karelia. [Zarastanie i produktivnost' makrofitov riada mal'kikh ozer IUzhnoi Karelii], Freindling, A.V., *Botanicheskii zhurnal*, July 1985, 70(7), p.957-964, In Russian. Refs. p.963-964.
- 40-547**  
Limnology, Permafrost beneath lakes, Aquatic plants, Biomass, Lake water, Bottom sediment.
- 40-548**  
Soil formation in soil complexes affected by windthrows in the fir forests of southern taiga. [Osobenosti pochvoobrazovaniya vetroval'nykh kompleksov v el'nikakh iuzhnoi taigi], Stroganova, M.N., et al., *Moscow. Universitet. Vestnik. Seriya 17 Pochvovedeniye*, July-Sep. 1985, No.3, p.23-31, In Russian. 5 refs.
- 40-549**  
Fargul'ian, V.O., Goncharuk, N.I.U., Vasenev, I.I.
- 40-550**  
Taiga, Forest soils, Cryogenic soils, Soil formation, Soil profiles, Soil composition.
- 40-551**  
Basic regularities of the distribution of potassium and potassium-chlorine ratios in the subarctic front of the northwestern part of the Pacific Ocean. [Osobnyye zakonomernosti raspredeleniya kaliiya i otnoshenii k/cl v subarkticheskoi fronte severo-zapadnoi chasti Tikhogo okeana], Il'ichev, V.I., et al., *Akademiya nauk SSSR. Doklady*, 1985, 283(2), p.348-353, In Russian. 9 refs.
- 40-552**  
Isaeva, A.A., Savchenko, V.K., Solfer, V.N.
- 40-553**  
Ocean environments, Water transport, Ocean currents, Water temperature, Water chemistry.
- 40-554**  
Biogeochemical anomalies in the zone of cryogenesis and the criteria of their interpretation. [Biogeochemicheskie anomalii v zone kriogeneza i kriterii ikh interpretatsii], Lobanova, A.B., *Akademiya nauk SSSR. Doklady*, 1985, 283(2), p.458-460, In Russian. 6 refs.
- 40-555**  
Exploration, Moraines, Permafrost distribution, Permafrost hydrology, Capillarity, Geochemistry, Soil water migration, Minerals.
- 40-556**  
Influence of frosts on accuracy of spruce-seed crop forecasts in the Arkhangelsk region. [Vliyanie zamorozkov na tochnost' prognoza urozhaya semian eli v Arkhangel'skoi oblasti], Barabii, A.I., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya. Izvestiya vysshih uchebnykh zavedenii. Lesnoi zhurnal*, 1985, No.4, p.122-125, In Russian. 11 refs.
- 40-557**  
Forest land, Plant ecology, Plant physiology, Seeds, Frost action.

- 40-524**  
Instructive case of heating pipeline base deformations in peat area. Kul'chitskii, G.B., *Soil mechanics and foundation engineering*, Jan.-Feb. 1985 (Pub. July 85), 22(1), p.4-6, Translated from Osnovaniia, fundamente i mekhanika gruntov. 1 ref.  
**Swamps, Heat pipes, Peat, Supports, Piles, Foundations, Sands, Frost penetration, Soil water migration, Deformation.**
- 40-525**  
Analysis of beam foundations on swelling soils. Mustafaev, A.A., et al, *Soil mechanics and foundation engineering*, Jan.-Feb. 1985 (Pub. July 85), 22(1), p.7-12, Translated from Osnovaniia, fundamente i mekhanika gruntov. 4 refs.  
Gabibov, F.G., Ergandzhiev, A.P.  
**Foundations, Wettability, Buildings, Deformation.**
- 40-526**  
Analysis of conservation of building soil bases in permafrost state (in conformity with chapter SNIP II-18-76 and its guide). Gokhman, M.R., et al, *Soil mechanics and foundation engineering*, Jan.-Feb. 1985 (Pub. July 85), 22(1), p.18-21, Translated from Osnovaniia, fundamente i mekhanika gruntov. 5 refs.  
Shchelokov, V.K.  
**Foundations, Permafrost bases, Permafrost control, Artificial freezing, Buildings, Frozen ground temperature.**
- 40-527**  
Lithochemical methods of surveying and exploration. (Litokhimicheskie metody s'emki i poiskov). Pitul'ko, V.M., et al, Metodicheskoe posobie po geologicheskoi s'emke mashtaba 1:50 000, 15 vypusk (Methodological guide to geological surveying on a 1:50 000 scale, No.15), Leningrad, Vsesoiuznyi geologicheskii institut, 1985, 199p. (Pertinent p.45-100), In Russian with abridged English table of contents enclosed. 49 refs.  
Reznikov, I.N., Ul'ianov, N.K.  
**Tundra, Geochemistry, Taiga, Exploration, Alpine landscapes, Permafrost distribution, Forest land, Steppes, Deserts, Surveys, Mapping.**
- 40-528**  
Ships' power plants and electrical equipment. (Sudovye energeticheskie ustanovki i elektrooborudovanie). Panin, I.U.I., ed, Leningrad, Transport, 1985, 112p., In Russian. For selected papers see 40-529 and 40-530. Refs. passim.  
**Ships, Ice navigation, Propellers, Engines, Ice loads, Ice pressure, Models.**
- 40-529**  
Modeling dynamics of the system turbines-hydraulic gear drive-shafting-propeller during its interaction with ice. (Modelirovanie dinamiki sistemy turbiny-gidrozubchataia peredacha-valoprovod-vint pri vzaimodelstvii so l'dom). Basalygin, G.M., Sudovye energeticheskie ustanovki i elektrooborudovanie (Ships' power plants and electrical equipment) edited by I.U.I. Panin, Leningrad, Transport, 1985, p.3-11, In Russian. 2 refs.  
**Ships, Ice navigation, Propellers, Engines, Ice loads, Propagation, Ice pressure, Models.**
- 40-530**  
Operating conditions of main engines of "Mikhail Strelakovsky" type ships in ice. (Rezhimy raboty glavnogo dvigatel'ia sudov tipa "Mikhail Strelakovsky" vo l'dakh). Volosov, M.I., Sudovye energeticheskie ustanovki i elektrooborudovanie (Ships' power plants and electrical equipment) edited by I.U.I. Panin, Leningrad, Transport, 1985, p.11-24, In Russian. 3 refs.  
**Ice navigation, Engines, Ships.**
- 40-531**  
Sea ice interpretation on radar satellite images. (Deshifirovanie morskikh l'dov na radiolokatsionnykh sputnikovykh snimkakh). Bushuev, A.V., et al, *Issledovanie Zemli iz kosmosa*, May-June 1985, No.3, p.9-15, In Russian with English summary. 2 refs.  
Grishchenko, V.D., Masanov, A.D.  
**Ice surveys, Spaceborne photography, Photointerpretation, Fast ice, Sea ice distribution, Polynyas, USSR—Severnaya Zemlya.**
- 40-532**  
Determining characteristics of the Sea of Okhotsk ice cover during winter of 1983-1984 from radar sensing data. (Opredelenie kharakteristik ledianogo pokrova Okhotskogo moria zimoi 1983-1984 gg. po dannym radiolokatsionnogo zondirovaniia). Mitnik, L.M., et al, *Issledovanie Zemli iz kosmosa*, May-June 1985, No.3, p.16-22, In Russian with English summary. 7 refs.  
Desiatova, G.I., Kovbasiuk, V.V.  
**Spaceborne photography, Radar photography, Sea ice distribution, Ice surveys, Fast ice, Ice edge.**
- 40-533**  
Using Cosmos-1500 satellite radar images for studying sea ice distribution and dynamics. (Ispol'zovanie radiolokatsionnykh snimkov ISZ "Kosmos-1500" dlia issledovaniia raspredeleniia i dinamiki morskikh l'dov). Bushuev, A.V., et al, *Issledovanie Zemli iz kosmosa*, May-June 1985, No.3, p.23-27, In Russian with English summary. 3 refs.  
Bychenkov, I.U.D.  
**Mapping, Spaceborne photography, Ice surveys, Side looking radar, Sea ice distribution, Drift, Photointerpretation.**
- 40-534**  
Quantitative interpretation of satellite radar images of sea ice using a priori data. (Kolichestvennaia interpretatsiia sputnikovykh radiolokatsionnykh izobrazhenii morskikh l'dov s ispol'zovaniem apriornykh dannykh). Aleksandrov, V.I.U., et al, *Issledovanie Zemli iz kosmosa*, May-June 1985, No.3, p.28-31, In Russian with English summary. 1 ref.  
Loshchilov, V.S.  
**Spaceborne photography, Photointerpretation, Aerial surveys, Sea ice distribution, Ice conditions.**
- 40-535**  
Arctic and Antarctic radar charts compiled on the basis of Cosmos-1500 satellite data and preliminary results of their analysis. (Radiolokatsionnye karty Arktiki i Antarktidy po dannym ISZ "Kosmos-1500" i predvaritel'nye rezul'taty ikh analiza). Burtsev, A.I., et al, *Issledovanie Zemli iz kosmosa*, May-June 1985, No.3, p.34-63, In Russian with English summary. 12 refs.  
**Radar photography, Photointerpretation, Spaceborne photography, Side looking radar, Mapping, Antarctica, Arctic Ocean.**
- Theories of the formation of radar-signal backscattering from land and sea ice are discussed. Radar charts of the Arctic and Antarctic, obtained by side-looking radar from the Cosmos-1500 satellite, are presented and ice-cover features on the charts analyzed.
- 40-536**  
Side-looking radar of the Cosmos-1500 satellite. (Radiolokator bokovogo obzora ISZ "Kosmos-1500"). Kalmykov, A.I., et al, *Issledovanie Zemli iz kosmosa*, May-June 1985, No.3, p.76-83, In Russian with English summary. 6 refs.  
**Spaceborne photography, Radar photography, Side looking radar, Photointerpretation, Sea ice distribution, Land ice.**
- 40-537**  
Information potential of the side-looking radar system of the Cosmos 1500 satellite. (Informatsionnye vozmozhnosti radiolokatsionnoi sistemy bokovogo obzora ISZ "Kosmos-1500"). Tsybmal, V.N., et al, *Issledovanie Zemli iz kosmosa*, May-June 1985, No.3, p.84-92, In Russian with English summary. 8 refs.  
**Spaceborne photography, Radar photography, Sea ice distribution, Ice conditions, Shores, Ice surveys, Ice dating, USSR—Kara Sea.**
- 40-538**  
Digital processing of radar images transmitted from the Cosmos-1500 satellite. (Tsifrovaia obrabotka radiolokatsionnykh izobrazhenii poluchennykh so sputnika "Kosmos-1500"). Asmus, V.V., et al, *Issledovanie Zemli iz kosmosa*, May-June 1985, No.3, p.107-114, In Russian with English summary. 7 refs.  
**Fast ice, Spaceborne photography, Young ice, Radar photography, Sea ice distribution, Photointerpretation, Computer applications, Charts.**
- 40-539**  
Thermally nonhomogeneous elasticity problem for freezing bases of structures. (Termoneodnorodnaia zadacha uprugosti dlia promerzaiushchikh osnovanii sooruzhenii). Demin, I.I., Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. *Izvestiia vysshiikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.5, p.48-51, In Russian. 6 refs.  
**Foundations, Frost penetration, Frozen ground physics, Buildings, Elasticity.**
- 40-540**  
Wind tunnel studies of the 2nd microregion in the scientific town SO VASKhNIL. (Issledovaniia aerodinamiki vtorogo mikroraiuna nauchnogo gorodka SO VASKhNIL v aerodinamicheskoi trubey). Kuraev, A.A., et al, Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. *Izvestiia vysshiikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.5, p.51-56, In Russian. 3 refs.  
Nesterov, B.V., Salenko, S.D.  
**Wind tunnels, Urban planning, Residential buildings, Snowdrifts, Snow accumulation, Wind factors, Protective vegetation, Models, Analysis (mathematics), Charts.**
- 40-541**  
Using sand drains in drying water-saturated cohesive ground. (Osushenie svyaznykh gruntov povyshennoi vlazhnosti peschanyimi drenami). Gur'ev, T.A., et al, Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. *Izvestiia vysshiikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.5, p.102-105, In Russian. 6 refs.  
Shirshov, E.V.  
**Roadbeds, Foundations, Paludification, Drainage, Banks (waterways).**
- 40-542**  
Methods and results of interpreting multizonal satellite photographs obtained during geocryological mapping of the Central Yakutian Plain. (Voprosy metodiki i rezul'taty deshifirovaniia mnogozonal'nykh kosmicheskikh snimkov pri merzlotnom kartirovaniia (na primere Tsentral'no-Iakutskoi nizmennosti)). Gavrilov, A.V., et al, *Inzhenernaia geologiya*, July-Aug. 1985, No.4, p.89-99, In Russian. 8 refs.  
Pizhankova, E.I.  
**Mapping, Spaceborne photography, Taiga, Photointerpretation, Geocryology, Permafrost distribution, Permafrost hydrology.**
- 40-543**  
Allowing for the scale factor when estimating the strength of perennally frozen ground. (Uchet vliianiia mashtabnogo faktora pri opredelenii prochnostnykh svoistv merzlykh gruntov). Roman, L.T., *Inzhenernaia geologiya*, July-Aug. 1985, No.4, p.100-107, In Russian. 11 refs.  
**Permafrost physics, Frozen rock strength, Models.**
- 40-544**  
Calorimetric method for studying phase composition of water in peat. (Issledovanie fazovogo sostava vody v torfe kalorimetriceskimi metodami). Lishtvan, I.I., et al, *Inzhenernaia geologiya*, July-Aug. 1985, No.4, p.114-119, In Russian. 12 refs.  
Brovka, G.P., Davidovskii, P.N.  
**Swamps, Peat, Ground ice, Soil water migration, Frost penetration, Phase transformations, Unfrozen water content.**
- 40-545**  
Soviet nuclear-powered icebreakers. (Sovetskie atomnye ledokoly). Demin, I.I., et al, Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. *Izvestiia vysshiikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.5, p.27-29, In Russian. 4 refs.  
Shershnev, V.N.  
**Icebreakers, Ice navigation, Nuclear power, Arctic Ocean.**
- 40-546**  
Antarctica. Hearing. U.S. Senate. Committee on Commerce, Science, and Transportation. Subcommittee on Science, Technology, and Space, Ninety-eighth Congress, Second session on Antarctica, Sep. 24, 1984, Washington, D.C., U.S. Government Printing Office, 1984, 88p. Serial No.98-111.  
**Natural resources, Economic development, Low temperature research, Environmental protection, International cooperation, Antarctica.**
- The Hearing was conducted on Sep. 24, 1984 to receive testimony from experts and knowledgeable persons regarding the present status of and problems associated with the possible development of commercial krill harvesting and exploring and recovering mineral resources in Antarctica. The eight persons who spoke to the Subcommittee represented government and

non-government agencies, the academic and scientific communities, and environmental and conservation groups. Two additional prepared statements are included.

#### 40-547

##### Polar glaciology.

Robin, G. de Q., *U.S. National Aeronautics and Space Administration. Technical memorandum*, Aug. 1984, NASA TM-86129, Earth observing system, Vol.1, Part 2: Science and mission requirements. Working group report (Appendix), p.A37-A40. N84-30445.

**Ice sheets, Radar echoes, Height finding, Ice shelves, Measuring instruments, Ice mechanics.**

Looking into the 1990s, two research fields seem likely to be of dominant interest: ice sheets via a climate change and interpretation of deep ice cores. These two facets are discussed as to observational requirements for increasing the knowledge of ice sheets and ice sheet-atmosphere interactions. Standards for observations are listed and the role of satellites in both observational and analytical functions is emphasized.

#### 40-548

**Protection of roads from rock-avalanches and snow avalanches.** [Zashchita puti ot kamnepadov i snezhnykh lavin].

Samochernov, I.U.G., et al, *Transportnoe stroitel'stvo*, July 1985, No.7, p.6, In Russian.

Grekh, S.P., Teterskii, E.A.

**Railroads, Slope processes, Landslide control, Avalanche engineering, Countermeasures, Embankments, Tunnels.**

#### 40-549

**Approximate calculation of maximum sizes of nalds from subpermafrost ground water.** [Priblizhennyy sposob rascheta maksimal'noy velichiny naledov podmerzlotnykh vod].

Sokolov, A.A., *Transportnoe stroitel'stvo*, July 1985, No.7, p.7-8, In Russian.

**Permafrost hydrology, Nalds, Subpermafrost ground water, Ice volume, Railroads.**

#### 40-550

**Equipment for drilling wells in hard rocks.** [Mekhanizatsiya prokhodki skvazhin v prochnykh gruntakh].

Boiko, N.V., et al, *Mekhanizatsiya stroitel'stva*, Aug. 1985, No.8, p.12-13, In Russian. 4 refs.

**Core samplers, Frozen rock strength, Wells, Drilling.**

#### 40-551

**Frozen ground excavation with automotive scrapers.** [Effektivnost' razrabotki merzlykh gruntov samokhodnymi skreperami].

Belikov, I.U.I., et al, *Mekhanizatsiya stroitel'stva*, Aug. 1985, No.8, p.17-18, In Russian. 2 refs.

**Earthwork, Equipment, Excavation, Frozen ground.**

#### 40-552

**D3-37A bulldozers with clogged buckets.** [Bul'dozer D3-37A s cheliustnym zakhvatom].

Balovnev, V.I., et al, *Mekhanizatsiya stroitel'stva*, Aug. 1985, No.8, p.22-23, In Russian.

Mirsadykov, M.A.

**Earthwork, Roads, Winter maintenance, Snow removal.**

#### 40-553

**MS-353 screw conveyor-mixer and unloading equipment.** [Shnekovyy smesitel'-peregruzhatel' MS-353].

Min'kov, P.A., *Mekhanizatsiya stroitel'stva*, Aug. 1985, No.8, p.24-25, In Russian.

**Concrete placing, Concrete heating, Mortars, Grout-ing, Electric heating, Cold weather construction.**

#### 40-554

**Construction of 110 kv substations in the Far North using modular structures.** [Stroitel'stvo PS 110 kv v raiionakh Kraynego Severa s ispol'zovaniem krupnoblochnykh konstruktov].

Zaitsev, L.I., et al, *Energeticheskoe stroitel'stvo*, July 1985, No.7, p.22-23, In Russian.

Sosiak, N.V., Sotskov, N.A.

**Electric power, Industrial buildings, Modular construction, Permafrost beneath structures, Subarctic regions, Transportation, Snowdrifts.**

#### 40-555

**Designing foundations of the main body of the Anadyr thermo-electrical power plant, for perennially frozen ground.** [Proektirovaniye fundamentov glavnogo korpusa Anadyrskoi TETs v usloviyakh vechnomerzlykh gruntov].

Guzenko, N.G., *Energeticheskoe stroitel'stvo*, July 1985, No.7, p.37-38, In Russian.

**Industrial buildings, Permafrost beneath structures, Foundations, Thermal insulation.**

#### 40-556

**Snowdrift effect on the stability of pile supports of utility pipelines built on frost-heaving ground.** [Vliyanie snezhnykh zanosov na ustoychivost' svaynykh opor teplotrass na puchinystrykh gruntakh].

Ivonin, O.A., *Energeticheskoe stroitel'stvo*, July 1985, No.7, p.38-40, In Russian. 4 refs.

**Pipelines, Snowdrifts, Heat pipes, Supports, Piles, Frost heave, Snow cover effect, Thermal insulation.**

#### 40-557

**Flexible technology of bridge construction.** [Gibkaia tekhnologiya stroitel'stva mostov].

Silin, K.S., et al, *Transportnoe stroitel'stvo*, Aug. 1985, No.2, p.14-21, In Russian.

Solov'ev, G.P.

**Piles, Steel structures, Foundations, Bridges, Ice-bound rivers, Ice pressure, Concrete structures, Prefabrication, Reinforced concretes.**

#### 40-558

**To the northern resources.** [K severnym kladovym].

Tselodub, B.I., *Transportnoe stroitel'stvo*, Aug. 1985, No.8, p.56-57, In Russian.

**Transportation, Tundra, Forest tundra, Swamps, Railroads, Bridges, Permafrost depth, Subarctic regions, Natural resources.**

#### 40-559

**Bridge maintenance management, corrosion control, heating, and deicing chemicals.** *Transportation research record*, 1984, No.962, 88p., Refs. passim. For selected papers see 40-560 through 40-563.

**Bridges, Maintenance, Corrosion, Chemical ice prevention, Salting, Winter maintenance, Brines.**

#### 40-560

**Management of bridge maintenance, repair, and rehabilitation—a city perspective.**

Shirolé, A.M., *Transportation research record*, 1984, No.962, p.9-13.

**Bridges, Maintenance, Winter maintenance, Road maintenance.**

#### 40-561

**Bridge heating using ground-source heat pipes.**

Lee, R.C., et al, *Transportation research record*, 1984, No.962, p.51-56, 9 refs.

Sackos, J.T., Nydahl, J.E., Pell, K.M.

**Bridges, Heat pipes, Heating, Heat transfer, Ice control, Snow removal.**

#### 40-562

**Field performance of experimental bridge deck membrane systems in Vermont.**

Frascio, R.I., *Transportation research record*, 1984, No.962, p.57-65, 4 refs.

**Bridges, Winter maintenance, Salting, Chemical ice prevention, Surface properties, Pollution, Damage, Countermeasures.**

#### 40-563

**Production and testing of calcium magnesium acetate in Maine.**

Hsu, M.T., *Transportation research record*, 1984, No.962, p.77-82, 8 refs.

**Salting, Manufacturing, Chemical ice prevention, Corrosion, Bridges, Winter maintenance, Runoff, Sands, Skid resistance, Tests.**

#### 40-564

**Dynamics of the modern climate of polar regions.**

Voskresenskii, A.I., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1982, 18(12), p.978-984, 27 refs. Translated from its Izvestiya. Fizika atmosfery i okeana.

Marshunova, M.S.

**Sea ice, Ice cover effect.**

The temporal variations (primarily during the 1938-1981 period) of the temperature, cloud cover, duration of the snowless period, atmospheric transmission, radiation balance, and the direct and total radiation are discussed. Present-day cooling in the polar regions is occurring against a background of reduced cloud cover and duration of the snowless period, an increase in the sea ice and a reduction in the surface radiation balance despite an increase in the direct and global radiation. The unidirectional trend of the hydrometeorological processes on a climatic scale leads to a very perceptible change of the climate in the polar regions. (Auth.)

#### 40-565

**Photoadaptation of high Arctic ice algae.**

Cota, G.F., *Nature*, May 16-22, 1985, 315(6016), p.219-222, 26 refs.

**Snow cover effect, Algae, Photosynthesis.**

#### 40-566

**Feasibility studies of Polar Patrol Balloon.**

Nishimura, J., et al, *Advances in space research*, 1985, 5(1), p.87-90, 9 refs.

Kodama, M., Tsuruda, K., Fukunishi, H.

**Balloons, Engineering, Research projects.**

Engineering and meteorological feasibility of a circum-south-polar ballooning project, called "Polar Patrol Balloon (PPB)".

for space and geophysical researches are studied. We plan to use zero-pressure balloons mounting an auto-ballasting system, utilizing the non-sunset condition in mid-summer. PPB will be launched to a level higher than 30 km from an observational base in Antarctica and come back there by a circumpolar wind. It is predicted that the circumpolar period may be a few weeks in the case of mid-summer 30 km level flight and its meridional deviation after a circumpolar flight may be within a few hundred kilometers. We have tested auto-ballasting and ARGOS-tracking, and are developing some on-board data accumulation systems and power supply. If we can collaborate with foreign bases, results of PPB should be much more successful especially concerning simultaneous observations at various latitudes. (Auth.)

#### 40-567

**Proceedings of the colloquium on French research in the Antarctic, Grenoble, Sep. 19-21, 1984.** [Actes, Colloque sur la recherche française dans l'Antarctique, Grenoble, 19/21 septembre, 1984, Comité National Français des Recherches Antarctiques, 1985, 174p., In French. Refs. passim. For selected papers see B-32504 through B-32506, B-32512, C-32503, E-32507 through E-32510, F-32490 through F-32494, G-32514, G-32515, H-32513, I-32495 through I-32497, K-32498 through K-32500, L-32501, and L-32502, or 40-568 through 40-575.]

**Ice sheets, Research projects, Meetings, Antarctica—Dumont d'Urville Station.**

The papers presented at the conference are classified in this volume under the following headings: glaciology and paleoclimatology, physicochemistry and dynamics of the lower atmosphere, astronomy and astrophysics, observatory activities and research at Dumont d'Urville, biology and geology of Adélie Coast, antarctic oceanography, and logistics and human factors.

Conclusions regarding each of these areas are offered at the end of the presentations. Three annexes provide a list of the members of the organizing committee, the conference program, and the list of participants, respectively.

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40-571

**Isotopes of cosmic origin in polar ice** [Les isotopes cosmogéniques dans la glace polaire], Yiou, P., et al. Actes du colloque sur la recherche française dans l'Antarctique, Grenoble 19/21 septembre 1984 (Proceedings of the colloquium on French research in the Antarctic, Grenoble, Sept. 19-21, 1984), Comité National Français des Recherches Antarctiques, 1985, p.42-44, In French. 4 refs. Raisbeck, G.M.

**Paleoclimatology, Ice cores, Ice composition, Isotopes.**

In the discussion of the formation of cosmogenic isotopes, it is pointed out that the deposition rate of cosmogenic nuclides on the earth's surface depends on solar activity through the modulating influence of the solar wind. It is suggested that concentration profiles of these nuclides in polar ice, for example, and especially the profile of Be-10, contain a continuous record of past solar activity. They also permit to determine with precision the age of the ice and the ice accumulation rates, thus offering valuable information for climatological studies.

40-572

**Interactions between atmospheric CO<sub>2</sub> and climate: glaciological approach.** [Interactions entre le CO<sub>2</sub> atmosphérique et le climat: l'approche glaciologique], Raynaud, D., Actes du colloque sur la recherche française dans l'Antarctique, Grenoble 19/21 septembre 1984 (Proceedings of the colloquium on French research in the Antarctic, Grenoble, Sept. 19-21, 1984), Comité National Français des Recherches Antarctiques, 1985, p.46-48, In French. 7 refs.

**Ice cores, Bubbles, Carbon dioxide.**

Analysis of air bubbles trapped in antarctic ice is suggested as the most direct method to obtain information on the sensitivity of temperature parameters to atmospheric CO<sub>2</sub> variations within the climatic system. Relevant investigations carried out in the past are reviewed, including studies of the evolution of atmospheric CO<sub>2</sub> over the last centuries, and of the climatic transition between the ice age and Holocene.

40-573

**Modelling of the general atmospheric circulation in connection with antarctic research on paleoclimatic reconstruction.** [Modélisation de la circulation générale atmosphérique en liaison avec les recherches antarctiques sur la reconstitution des paleoclimats], Joussaume, S., et al. Actes du colloque sur la recherche française dans l'Antarctique, Grenoble 19/21 septembre 1984 (Proceedings of the colloquium on French research in the Antarctic, Grenoble, Sept. 19-21, 1984), Comité National Français des Recherches Antarctiques, 1985, p.49-50, In French. 5 refs.

**Ice cores, Paleoclimatology, Climatic changes, Isotope analysis, Antarctica.**

The collaboration between paleoclimatologists and meteorologists involved in an atmospheric circulation simulation project is described. The model includes desert aerosols and water isotopes. A chart is presented showing observed and simulated geographic distribution of oxygen-18 precipitation on Jan. 18, and observed and simulated isotope-temperature relations.

40-574

**Movement of personnel and material to and within the Antarctic.** [Mouvement de personnel et de matériel dans l'Antarctique et vers l'Antarctique], Morlet, B., Actes du colloque sur la recherche française dans l'Antarctique, Grenoble 19/21 septembre 1984 (Proceedings of the colloquium on French research in the Antarctic, Grenoble, Sept. 19-21, 1984), Comité National Français des Recherches Antarctiques, 1985, p.142-146, In French.

**Cargo, Transportation, Ice navigation, Antarctica—Adélie Coast.**

A review is presented of various forms of navigation and transportation in the Antarctic, from early expeditions to current activities, and three basic strategies, particularly for Adélie Coast, are suggested: men should be transported to Antarctica by air, not by boat; for cargo operations, treated separately from transportation of personnel, icebreakers should be used, and their stay in the Antarctic should be short; French research activities should be carried out on a permanent base to be installed on Dome C. Factors conducive to the above conclusions are examined, and recommendations are offered regarding means of transportation, construction of runways, and costs.

40-575

**Polar cargo ship project.** [Projet de navire polaire], Balut, Y., Actes du colloque sur la recherche française dans l'Antarctique, Grenoble 19/21 septembre 1984 (Proceedings of the colloquium on French research in the Antarctic, Grenoble, Sept. 19-21, 1984), Comité National Français des Recherches Antarctiques, 1985, p.147-151, In French.

**Transportation, Ships, Antarctica—Adélie Coast.**

Based on difficulties met in the past to find cargo ships capable of approaching Adélie Coast, new transportation policies are being suggested. Beside the use of aircraft, the construction of a new, more adequate and better equipped cargo ship is ad-

vocated. Plans of such a ship are presented, its statistics given, and operations, including logistic, oceanographic, and off-shore functions, as well as routes and schedules, are outlined.

40-576

**Hydrologic regime and river-bed evolution of Siberian rivers.** [Gidrologicheskiy rezhim i ruslovyye protsessy rek Sibiri], Lysenko, V.V., ed. *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, 121p., In Russian. For selected papers see 40-577 through 40-585. Refs. passim.

**Mountains, Slope processes, Snow water equivalent, Icebound rivers, Snow accumulation, Ice breakup, Snow cover distribution, Ice forecasting, Mapping, Snow depth, Glacier ice, Meltwater, Ice volume, Glacial hydrology.**

40-577

**Water balance of the Angara River basin to the Bratsk power plant and peculiarities of its formation in separate years.** [Vodnyy balans basseina r. Angary do Bratskoj GES i nekotoryye osobennosti ego formirovaniya v otdel'nye godyy], Ovod, T.V., et al. *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, p.3-22, In Russian. 16 refs.

**Electric power, River basins, Water balance, Permafrost beneath rivers, Permafrost hydrology, Permafrost beneath lakes, Water reserves.**

40-578

**Space variations in annual distribution of water balance elements in the Ob' River Basin catchment area.** [Prostranstvennaya izmenchivost' vnutrigodovogo raspredeleniya elementov vodnogo balansa vodosborov rek v Basseine Obi], Gel'bukh, T.M., et al. *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, p.22-43, In Russian. 13 refs.

**Kutenkova, T.N. River basins, Lakes, Water balance, Runoff forecasting, Permafrost hydrology, Permafrost beneath rivers, Permafrost beneath lakes.**

40-579

**Methods of plotting medium-scale maps of the regime of Central Altai glaciers exemplified by the Katun Range (for the world atlas of snow-ice resources).** [Metodika postroeniya srednemashtabnykh kart rezhima lednikov Tsentral'nogo Altaia na primere Katun'skogo khrebt (v atlas snezhno-ledovykh resursov mira)], Galakhov, V.P., *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, p.44-48, In Russian. 7 refs.

**Maps, Glacial hydrology, Glacier ice, Ice volume, Accumulation, Alpine landscapes, Ablation, Ice surveys, Snow surveys.**

40-580

**Regime and meltwaters of the Central Altai glaciers.** [Rezhim i talye vody lednikov Tsentral'nogo Altaia], Galakhov, V.P., et al. *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, p.48-54, In Russian. 8 refs.

**Narozhnev, I.U.K., Dement'ev, M.V. Glacier ice, Ice (water storage), Snow water equivalent, River diversion, Glacial hydrology, Alimentation, Water reserves, Runoff, Ablation.**

40-581

**Probability estimation of snow depth distribution in the Koksia River basin (Altai Mountains).** [Veroyatnostnaya otsenka raspredeleniya vysoty snezhnogo pokrova v basseine r. Koksy (Gornyy Altai)], Chubenko, A.G., *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, p.55-61, In Russian. 7 refs.

**River basins, Snow cover distribution, Snow line, Snow depth, Snow surveys, Meteorological factors.**

40-582

**Length of persistence and intensity of mudflow-forming and common rains in southeastern West Siberia.** [Prodolzhitel'nost' i intensivost' seleobrazuyushchikh i obychnykh dozhdov na yugo-vostoke Zapadnoi Sibiri], Vinogradov, V.A., et al. *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, p.61-66, In Russian. 14 refs.

**Eremeeva, M.P., Strel'tsova, V.V. Slope processes, Rain, Mudflows, Meteorological factors.**

40-583

**Results of verification of the general scheme of short range forecasts of ice breakup dates for West Siberian rivers and some data on spring weakening of ice.** [Rezultaty proverki obshchey skhemy kratkosrochnogo prognoza srokov vskrytiya dlia rek Zapadnoi Sibiri i nekotoryye dannyye o vesenem oslablenii l'da], Liser, I.A., et al. *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, p.66-73, In Russian. 4 refs.

**Goncharova, N.A. Icebound rivers, Ice forecasting, Ice deterioration, Ice breakup.**

40-584

**Method of super-long-range forecasting of annual water inflow into reservoirs of the upper and central Yenisey River power plants, based on terminal information on atmospheric macroprocesses in winter.** [Metod sverkhdolgosrochnogo prognoza godovogo pritoka vody v vodokhranilishchna verkhnei i sredneisetskikh GES na osnov terminal'noi informatsii o zimnikh atmosferykh makroprotsessakh], Chernov, I.M., *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, p.73-78, In Russian. 7 refs.

**Electric power, River flow, Seasonal variations, Meltwater, River basins, Snow depth, Snow water equivalent.**

40-585

**Calculating maximum snow reserves under complicated orographic conditions of the Katun' River basin.** [Raschet maksimal'nykh snegozapasov v usloviakh slozhnoi orografii (po issledovaniyam v basseine r. Katun)], Galakhov, V.P., et al. *Zapadno-Sibirskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.72, p.109-115, In Russian. 8 refs.

**Dement'ev, M.V., Osipov, A.V., Siubaev, A.A. Snow accumulation, Snow cover distribution, Snow depth, Slope processes, Alpine landscapes, Snow surveys, Avalanche engineering, Mapping, Charts.**

40-586

**Influence of ice conditions in Arctic seas on atmospheric precipitation distribution over Kazakhstan.** [O vliyanii ledovitosti morei Severnogo Ledovitogo okeana na raspredelenie osadkov po territorii Kazakhstana], Panova, E.N., *Alma-Ata. Kazakhskiy regional'nyy nauchno-issledovatel'skiy institut. Trudy*, 1985, Vol.92, p.59-67, In Russian. 8 refs.

**Ice conditions, Precipitation (meteorology), Sea ice distribution, Arctic Ocean.**

40-587

**Polarization technique of analyzing the ice phase structure in clouds.** [O polarizatsionnom metode analiza struktury ledianoi fazy v oblakakh], Nevzorov, A.N., *Moscow. Tsentral'naya aerologicheskaya observatoriya. Trudy*, 1985, Vol.158, p.14-23, In Russian with English summary. 14 refs.

**Cloud physics, Particles, Phase transformations, Ice crystals, Measuring instruments, Supercooled clouds.**

40-588

**Climate in the vicinity of Ross Island.** [Klimat v blizosti Ross Island], Savage, M., et al. *Antarctic journal of the United States*, Mar. 1985, 20(1), p.1-8, 15 refs.

**Stearns, C. Meteorological instruments, Measuring instruments, Remote sensing, Climate, Weather observations, Weather stations, Antarctica—Ross Island.**

A brief review is given of the development of the Automatic Weather Station system (AWS) used in Antarctica, its methods of operation, and its capabilities. The AWS network is described, the body of data received is analyzed, and statistical summaries are displayed in tables. Accompanying charts provide convenient comparisons of weather conditions among the various AWS and manned stations.

40-589

**World Data Center-A for Glaciology: functions and services.** [Barry, R.G., et al. *Antarctic journal of the United States*, Mar. 1985, 20(1), p.14-16.

**Brennan, A.M. Data processing, Glaciology, Snow, Ice.**

This center is one of three world-wide collecting agencies of data on the many forms of snow and ice. Literature and other holdings, functions of the Center, and its international responsibilities are described. Glacier photographs, sea ice data, and snow cover information are of particular interest.

- 40-590**  
Basic trends in dust control of mines and mine shafts in the North. [Osnovnye napravleniia obespyvaniia shakht i rudnikov Severa]. Chemezov, E.N., Yakutsk, Yakut. fil. SO AN SSSR, 1984, 161p., In Russian with English table of contents enclosed. 80 refs.  
Mine shafts, Coal, Dust control, Ventilation, Drilling, Permafrost, Water treatment.
- 40-591**  
Mechanization of ore extraction work and roof-control in placer mines of the North. [Mekhanizatsiia ochistnykh rabot i upravlenie krovlei na rossypnykh shakhtakh Severa]. Sleptsov, A.E., Yakutsk, Yakut. fil. SO AN SSSR, 1983, 150p., In Russian with abridged English table of contents enclosed. 149 refs.  
Placer mining, Permafrost thermal properties, Mine shafts, Roofs, Supports, Frozen fines, Sands, Frozen rock strength, Rock excavation.
- 40-592**  
Essentials of forecasting thermal abrasion of shores. [Osnovy prognoza termoabrazii beregov]. Are, F.E., Novosibirsk, Nauka, 1985, 172p., In Russian with English table of contents enclosed. Refs. p.141-155.  
Shore erosion, Abrasion, Permafrost thermal properties, Ocean waves, Lake water, River water, Hydrothermal processes.
- 40-593**  
Clayey formations of Quaternary deposits in Central Yakutia (conditions of accumulation). [Glinistye obrazovaniia chetvertichnykh otlozhenii Tsentral'noi Iakutii (uslovia nakopleniia)]. Uskov, M.N., Yakutsk, Yakut. fil. SO AN SSSR, 1984, 182p., In Russian with English table of contents enclosed. 68 refs.  
Grain size, Frozen fines, Cryogenic textures, Cements, Cryogenic structures, Lithology, Aggregates, Thermokarst, Sedimentation, Lacustrine deposits, Clays, Hydrothermal processes, Loams, Frost penetration.
- 40-594**  
Thematic and regional investigations of permafrost in northern Eurasia. [Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii] (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, 160p., In Russian. For individual papers see 40-595 through 40-609. Refs. passim. DLC GB648.55.T45  
Maps, Alassy, Permafrost physics, Geological surveys, Frozen ground temperature, Permafrost depth, Snow cover effect, Lacustrine deposits, Dielectric properties, Permafrost distribution, Sedimentation, Permafrost hydrology, Measuring instruments.
- 40-595**  
Snow cover and deep freezing of the lithosphere. [Snezhnyi pokrov i glubokoe promerzanie litosfery]. Nekrasov, I.A., Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.3-21, In Russian. Refs. p.19-21.  
Soil freezing, Soil temperature, Cooling rate, Snow cover effect, Frost penetration.
- 40-596**  
Relation of firn line and upper forest boundary altitudes in mountain glacier regions. [O sootnoshenii snegovoi granitsy i gornoi krovli na gorakh]. Severskii, I.V., et al, Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.21-30, In Russian. Refs. p.29-30.  
Forest lines, Forest soils, Snow line, Forest land, Glacier ice, Alpine landscapes, Glacial hydrology, Permafrost distribution.
- 40-597**  
Permafrost of Bol'shezemel'skaya tundra. [Mnogoletnemerzlye porody Bol'shezemel'skoi tundry]. Ginsburg, G.D., et al, Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.31-46, In Russian. 5 refs.  
Isaev, V.N.  
Tundra, Frozen rock temperature, Active layer, Continuous permafrost, Lithology, Landscape types, Permafrost hydrology, Mapping, Permafrost distribution, Charts.
- 40-598**  
Permafrost thickness in the Polar and Subpolar Urals. [O moshchnosti merzlof zony Poliarnogo i Pripoliarnogo Urala]. Oberman, N.G., Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.47-59, In Russian. 9 refs.  
Permafrost distribution, Permafrost thickness, Lithology, Charts, Polar regions, Mapping, Subpolar landscapes, Landscape types, USSR—Ural Mountains.
- 40-599**  
Permafrost distribution in the southern part of Central Siberia. [Rasprostraneniie merzlykh gornyykh porod v juzhnoi chasti Srednei Sibiri]. Shats, M.M., Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.60-65, In Russian. 16 refs.  
Maps, Permafrost distribution, Sporadic permafrost, Discontinuous permafrost, Permafrost thickness, Permafrost depth.
- 40-600**  
Geothermal conditions of the Chara-Tokko interfluv. [Geotermicheskie uslovia Charo-Tokkinskogo mezhdurech'ia]. Dorofeev, I.V., et al, Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.65-74, In Russian. 4 refs.  
Zhelezniak, M.N., Volod'ko, B.V., Sarzhin, M.S.  
Permafrost beneath rivers, Frozen rock temperature, Topographic effects, Charts, Permafrost hydrology, Taliks.
- 40-601**  
Peat accumulation and related phenomena at the Chara-Tokko interfluv. [Torfonakopleniie i svyaznye s nim kriegennye yavleniia na Charo-Tokkinskom mezhdurech'ie]. Gotovtsev, S.P., et al, Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.75-84, In Russian. 6 refs.  
Dorofeev, I.V., Klimovskii, I.V., Gribanova, S.P.  
River basins, Valleys, Swamps, Peat, Permafrost distribution, Baykal Amur railroad, Charts, Alpine landscapes, Permafrost structure, Permafrost distribution, USSR—Transbaikalia.
- 40-602**  
Some aspects of permafrost development in the Baykal type depressions along the BAM railroad line. [Nekotorye aspekty razvitiia krovli na zapadnakh Baikal'skogo tipa po trassee BAMaj]. An, V.V., Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.84-95, In Russian. Refs. p.92-94.  
Valleys, Permafrost distribution, Swamps, Alpine landscapes, Geological surveys, Geocryology, Cryogenic structures, Peat, Ground ice, Permafrost hydrology, Taliks.
- 40-603**  
Temperature field of rocks in the upper Vilyuy River valley. [Temperaturnoe pole porod v doline verkhnego techeniia r. Viliui]. Beliaikov, L.P., et al, Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.95-101, In Russian.  
Moskvina, M.M.  
Permafrost beneath rivers, Frozen rock temperature, Valleys, Swamps, Peat, Ice wedges, Frozen rock temperature, Slope orientation, Geomorphology.
- 40-604**  
Recent sedimentation rates in alassy lakes of Central Yakutia. [Sovremennye tempy sedimentatsii v alassnykh ozerakh Tsentral'noi Iakutii]. Bosikov, N.P., Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.101-106, In Russian. 5 refs.  
Geological surveys, Alassy, Permafrost hydrology, Thermokarst lakes, Lacustrine deposits, Sedimentation, Permafrost beneath lakes, Loess, Ice veins, Shore erosion.
- 40-605**  
Lakes in the permafrost area of the Bestyakh Terrace of the Lena River and their interrelations with ground water. [Ozera kriolitozony Bestyakhskoi terrasy r. Leny i ikh vzaimosviaz' s podzemnymi vodami]. Shepelev, V.V., et al, Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.106-115, In Russian. 5 refs.  
Lomovtseva, N.S.  
Permafrost beneath rivers, Permafrost beneath lakes, Permafrost hydrology, Ground water, Migration.
- 40-606**  
Dynamics of seasonal thawing of ground in eastern Yakutia. [O dinamike sezonnogo protaivaniia grunta v Vostochnoi Iakutii]. Vasil'ev, I.S., Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.116-127, In Russian. 11 refs.  
Active layer, Seasonal freeze thaw, Soil water migration, Permafrost depth, Frozen ground temperature.
- 40-607**  
Permafrost-landscape studies in the Seledzha River basin. [Merzlotno-landshaftnye issledovaniia v basseine r. Seledzhi]. Pozdniakov, I.V., Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.128-136, In Russian. 3 refs.  
River basins, Geological surveys, Geocryology, Forest land, Taiga, Forest soils, Frost penetration, Seasonal freeze thaw, Active layer, Permafrost depth.
- 40-608**  
Peculiarities of permafrost transformation on the Turana Range during economic development of the BAM zone. [Osobennosti evoliutsii krovli na zapadnoi zony BAMa v khr. Turana]. Zabolotnik, S.I., et al, Tematicheskie i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.137-148, In Russian. 10 refs.  
Sorokina, Z.G.  
Permafrost distribution, Human factors engineering, Environmental protection, Baykal Amur railroad, Swamps, Mountains.

40-609

**Methods of measuring dielectric permeability of rocks.** (O metodike izmereniia dielektricheskoi pronitsaemosti gornykh porod). Zhandalinov, V.M., Tematicheskii i regional'nye issledovaniia merzlykh tolshch Severnoi Evrazii (Thematic and regional investigations of permafrost in northern Eurasia) edited by I.A. Nekrasov, Yakutsk, Inst. Merzlotovedeniia SO AN SSSR, 1981, p.148-153, In Russian. 10 refs.

**Frozen rocks, Dielectric properties, Thawing, Measuring instruments.**

40-610

**Frost durability of clay bricks—evaluation criteria and quality control.** National Research Council, Canada. Division of Building Research. Proceedings, Apr. 1984, No.8, Proceedings of the CBAC/DBR Manufacturers' Symposium, Mar. 7-8, 1984, 48p., 5 refs.

**Bricks, Frost resistance, Freezing, Clays, Saturation, Standards, Strength, Relaxation (mechanics), Experimentation.**

40-611

**Freezing and thawing of soil-water systems.** Anderson, D.M., ed, New York, American Society of Civil Engineers, 1985, 97p., Refs. passim. For individual papers see 40-612 through 40-621.

**Williams, P.J., ed.**  
**Permafrost thermal properties, Soil freezing, Ground thawing, Soil water migration, Unfrozen water content, Freeze thaw cycles, Settlement (structural), Frost heave, Ground ice.**

40-612

**Thawing of frozen clays.** Anderson, D.M., et al, MP 1923, Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.1-9, 11 refs.

**Tice, A.R.**  
**Ground thawing, Clays, Soil water migration, Ground ice, Ice nuclei, Porous materials, Latent heat, Unfrozen water content, Ice crystals, Temperature effects, Phase transformations.**

40-613

**Soil freezing and thawing: modelling and applications.**

Blanchard, D., et al, Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.10-17, 5 refs.

**Dupas, A., Fremont, M., Levy, M.**  
**Soil freezing, Ground thawing, Soil water, Frost heave, Bearing strength, Models, Freeze thaw cycles, Liquefied gases, Temperature effects.**

40-614

**Partial verification of a thaw settlement model.** Guymon, G.L., et al, MP 1924, Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.18-25, 6 refs.

**Berg, R.L., Ingersoll, J.**  
**Ground thawing, Settlement (structural), Heat transfer, Moisture transfer, Frost heave, Freeze thaw cycles, Models, Thaw weakening, Tests.**

Results from a one-dimensional model that estimates frost heave and thaw settlement are compared to laboratory soil column data. The model is based upon well known equations that describe heat and moisture flow in soils. Processes in freezing or thawing zones are approximated by a lumped isothermal heat budget approach as well as phenomenological equations that account for overburden effects and reduced fluid movement due to ice formation. Laboratory soil column data were obtained for one-dimensional freezing and then thawing of a silt soil. The model results accurately estimate temperature distributions and pore water pressures during thawing.

40-615

**Hydraulic properties of selected soils.** Ingersoll, J., et al, MP 1925, Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.26-35, 4 refs.

**Berg, R.L.**  
**Soil water, Frost heave, Settlement (structural), Freeze thaw cycles, Pavements, Tensile properties, Soil structure, Grain size, Mathematical models.**

The method and equipment used to coincidentally determine the hydraulic conductivity versus soil moisture tension and soil moisture retention characteristics of four soils are described. Over 30 soils have been tested, including gravels, sands, silts and clays. Most of the work has been conducted at soil moisture tensions less than 100 kPa (1 bar), but a few moisture retention curves extend to about 12 bars of soil moisture suction. Results for one soil from each type are described and discussed in detail. Grain size distributions and the two hydraulic relationships are shown for each of the four soils. An

equation suggested by Gardner is used to approximate both relationships. Coefficients for Gardner's equations for several different soils have been obtained and are tabulated.

40-616

**Continuum approach to modelling of frost heaving.** Black, P.B., et al, Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.36-45, 7 refs.

**Miller, R.D.**  
**Frost heave, Ice lenses, Ice models, Soil freezing, Pressure, Latent heat, Mathematical models, Computer programs.**

40-617

**Model for dielectric constants of frozen soils.** Oliphant, J.L., MP 1926, Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.46-57, 17 refs.

**Frozen ground physics, Soil composition, Ground thawing, Unfrozen water content, Dielectric properties, Temperature effects, Nuclear magnetic resonance.**

The dielectric constant of frozen soils is made up of contributions from each phase: mineral, ice, air and liquid water in the soil. The apparent dielectric constants of three soils, a kaolinitic, Montmorillonite and Palouse silt-loam, were measured under both thawed and frozen conditions at various temperatures and various water contents using time domain reflectometry (TDR). Nuclear magnetic resonance (NMR) was used to measure the unfrozen water contents of these soils at subfreezing temperatures. The NMR data were used to calculate the volume fractions of the ice and liquid water phases in the TDR experiments. It was found that a mixing model for the apparent dielectric constant of the soil samples assuming spherical air, ice and mineral inclusions in a water matrix was able to closely fit the TDR data. To obtain the best fit it was necessary to use an average dielectric constant for water somewhat less than that for bulk water. The mixing model can be used for the interpretation of TDR data obtained in the field. This allows for the measurement of unfrozen water contents using TDR at temperatures just below 0°C, where the liquid water phase makes up a significant portion of the TDR signal.

40-618

**Numerical model of subsea permafrost.** Outcalt, S., Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.58-65, 4 refs.

**Subsea permafrost, Permafrost thermal properties, Temperature distribution, Heat flux, Mathematical models, Brines, Beaufort Sea.**

40-619

**Frost heave of full-depth asphalt concrete pavements.** Zommerman, I., et al, MP 1927, Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.66-76, 12 refs.

**Berg, R.L.**  
**Frost heave, Pavements, Bituminous concretes, Thaw weakening, Soil water, Soil structure, Frost penetration, Grain size, Tests, Heat transfer, Moisture transfer, Frost resistance.**

During 1984 and early 1985 frost penetration, frost heave and thaw weakening were monitored on two full-depth test sections at CRRLE. The subgrade soil beneath one test section was a lean clay and the subgrade soil beneath the second test section was Hanover silt. Laboratory frost susceptibility tests were conducted for each soil, as were moisture retention curves and curves relating moisture content and unsaturated hydraulic conductivity. Results from the laboratory tests were used with FROSTIB, a coupled heat and mass flow computer model, to simulate performance of the field test sections. FROSTIB had never been applied to a cohesive soil similar to the lean clay. Results from model simulations on both soils agreed well, i.e. within about 15% with field measurements of frost heave and frost penetration with time.

40-620

**On the origin of aggradational ice in permafrost.** Burn, C.R., et al, Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.77-84, 11 refs.

**Smith, M.W.**  
**Permafrost hydrology, Water balance, Ground ice, Soil water migration, Thermal regime, Neutron probes, Frost heave, Active layer, Unfrozen water content, Soil temperature.**

40-621

**Sandwich permeator.** Wood, J.A., et al, Freezing and thawing of soil-water systems. Edited by D.M. Anderson and P.J. Williams, New York, NY, American Society of Civil Engineers, 1985, p.85-94, 7 refs.

**Williams, P.J.**  
**Frozen ground physics, Regelation, Soil water migration, Ground ice, Heat transfer, Mass transfer, Ice mechanics, Phase transformations, Water flow, Supercooling, Temperature effects, Pressure, Experimentation.**

40-622

**Thermal design considerations in frozen ground engineering.** Krzewinski, T.G., ed, New York, American Society of Civil Engineers, 1985, 277p., Refs. passim. For individual papers see 40-623 through 40-631.

**Tart, R.G., Jr., ed.**  
**Frozen ground temperature, Engineering, Permafrost thermal properties, Permafrost beneath structures, Excavation, Geothermy, Thermal conductivity, Ground thawing, Soil freezing, Artificial freezing, Unfrozen water content.**

40-623

**Ground temperatures in cold regions: Introduction.** Morgenstern, N.R., Thermal design considerations in frozen ground engineering. Edited by T.G. Krzewinski and R.G. Tart, Jr., New York, NY, American Society of Civil Engineers, 1985, p.1-7, 10 refs.

**Frozen ground temperature, Heat transfer, Permafrost thermal properties, Engineering, Geothermy.**

40-624

**Ground temperatures.** Hammer, T.A., Thermal design considerations in frozen ground engineering. Edited by T.G. Krzewinski and R.G. Tart, Jr., New York, NY, American Society of Civil Engineers, 1985, p.8-52, 9 refs.

**Frozen ground temperature, Permafrost thermal properties, Permafrost distribution, Snow cover effect, Soil erosion, Geothermy, Detection, Engineering, Design, Climatic factors, Topographic effects, Temperature distribution.**

40-625

**Soil thermometry.** Miller, D.L., Thermal design considerations in frozen ground engineering. Edited by T.G. Krzewinski and R.G. Tart, Jr., New York, NY, American Society of Civil Engineers, 1985, p.53-71, 6 refs.

**Frozen ground temperature, Soil temperature, Monitors, Frozen ground physics, Permafrost beneath structures, Temperature measurement, Accuracy.**

40-626

**Passive techniques for ground temperature control.** Heuer, C.E., Thermal design considerations in frozen ground engineering. Edited by T.G. Krzewinski and R.G. Tart, Jr., New York, NY, American Society of Civil Engineers, 1985, p.72-154, Refs. p.135-148.

**Soil temperature, Temperature control, Foundations, Permafrost beneath structures, Thermal regime, Thermal insulation, Pile structures, Convection, Design, Heat balance, Stefan problem.**

40-627

**Active freezing techniques.** Nixon, J.F., Thermal design considerations in frozen ground engineering. Edited by T.G. Krzewinski and R.G. Tart, Jr., New York, NY, American Society of Civil Engineers, 1985, p.155-171, 21 refs.

**Permafrost beneath structures, Refrigeration, Artificial freezing, Ducts, Thermal insulation, Soil freezing, Temperature control, Temperature effects, Heat flux, Design, Ground thawing.**

40-628

**Thawing techniques for frozen ground.** Esch, D.C., Thermal design considerations in frozen ground engineering. Edited by T.G. Krzewinski and R.G. Tart, Jr., New York, NY, American Society of Civil Engineers, 1985, p.172-185, 18 refs.

**Ground thawing, Excavation, Artificial thawing, Heat flux, Tunneling (excavation).**

40-629

**Ground thermal properties.** Farouki, O.T., Thermal design considerations in frozen ground engineering. Edited by T.G. Krzewinski and R.G. Tart, Jr., New York, NY, American Society of Civil Engineers, 1985, p.186-203, 29 refs.

**Permafrost thermal properties, Thermal conductivity, Active layer, Ground thawing, Ground ice, Soil structure, Unfrozen water content, Latent heat, Frozen ground physics.**

40-630

Review of analytical methods for ground thermal regime calculations.

Lunardini, V.J., MP 1922, Thermal design considerations in frozen ground engineering. Edited by T.G. Krzewinski and R.G. Tart, Jr., New York, NY, American Society of Civil Engineers, 1985, p.204-257, 33 refs.

Permafrost thermal properties, Frozen ground temperature, Thermal regime, Heat transfer, Structures, Heat balance, Phase transformations, Stefan problem, Analysis (mathematics).

40-631

Case histories of ground temperature effects.

Nixon, J.F., Thermal design considerations in frozen ground engineering. Edited by T.G. Krzewinski and R.G. Tart, Jr., New York, NY, American Society of Civil Engineers, 1985, p.258-274, 14 refs.

Permafrost beneath structures, Frozen ground temperature, Ground thawing, Refrigeration, Permafrost preservation, Pipelines, Thermal regime, Soil temperature, Geothermy, Climatic factors, Discontinuous permafrost, Ducts.

40-632

Studying space structure of soil cover in the Lake Baykal area from satellite photographs. [Izuchenie prostanstvennoy struktury pochvennogo pokrova Pribaykalia s ispol'zovaniem aerokosmicheskikh snimkov].

Kuz'min, V.A., *Issledovanie Zemli iz kosmosa*, July-Aug. 1985, No.4, p.53-57, In Russian with English summary. 4 refs.

Soil surveys, Spaceborne photography, Landscape types, Mountains, Photointerpretation, Plains, Cryogenic soils, Thermal regime, Polygonal topography, Patterned ground.

40-633

Reliability of embankments of the BAM railroad line on sagging bases. [Nadezhnost' nasypel na prosadochnykh osnovaniyakh BAMa]. Volodin, A.M., et al, *Transportnoe stroitel'stvo*, Sep. 1985, No.9, p.6-7, In Russian.

Chernavskii, V.P. Railroads, Embankments, Settlement (structural), Seasonal variations, Permafrost beneath structures, Soil stabilization, Earthfills.

40-634

Experimental construction of modular buildings. [Opytnoe stroitel'stvo zdaniy iz ob'emnykh blokov]. Merkul', I.E., et al, *Transportnoe stroitel'stvo*, Sep. 1985, No.9, p.25-26, In Russian.

Kovalova, A.I., Iakovlev, G.B., Mordukhovich, I.M. Residential buildings, Lightweight concretes, Modular construction, Walls, Prefabrication, Thermal insulation, Concrete structures.

40-635

Cements for surface lining with natural stones. [Rastvory dlia krepneniya oblitovki iz prirodno go kamnia]. Levin, A.G., et al, *Transportnoe stroitel'stvo*, Sep. 1985, No.9, p.27-28, In Russian. 3 refs.

Krylov, V.V. Grouting, Linings, Cements, Cement admixtures, Masonry, Frost resistance.

40-636

Fundamentals of protecting massive concrete from frost action. [K osnovaniyu zashchity massivnogo betona ot moroznykh razrusheniy]. Elizarov, E.N., et al, *Energeticheskoe stroitel'stvo*, Aug. 1985, No.8, p.28-31, In Russian. 3 refs.

Korableva, L.A., Khokhlova, N.A., Kapustin, V.M. Concrete structures, Winter concreting, Concrete strength, Laboratory techniques, Frost action.

40-637

Nuclear-powered icebreaking cargo ships mark a new stage in the exploitation of the Northern Sea Route. [Ledokol'no-transportnye suda s atomnoi energeticheskoi ustanovkoi—novyi etap v osvoenii Severnogo Morskogo puti]. Vinogradov, A.A., et al, *Sudostroenie*, Sep. 1985, No.9, p.5-6, In Russian. 3 refs.

Rodionov, N.N. Ice navigation, Nuclear power, Ice breaking, Ships, Northern Sea Route, Cargo.

40-638

Ship-handling harbor tug "Anton Mazin". [Portovyi buksir-kantovschik "Anton Mazin"]. Vasil'ev, E.S., et al, *Sudostroenie*, Sep. 1985, No.9, p.8-12, In Russian.

Kirillov, E.A., Krapivin, K.K. Ice navigation, Tugboats, Design.

40-639

Hull gear of a nuclear-powered Arctic barge-container-carrier. [Sudovye ustroystva atomnogo likhterovoza-kontainerovoza arkticheskogo plavaniya]. Lozachev, B.N., *Sudostroenie*, Sep. 1985, No.9, p.21-24, In Russian.

Ice navigation, Ships, Nuclear power, Design, Arctic Ocean.

40-640

Proceedings.

Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, 216p., DE85003360, Refs. passim. For individual papers see 40-641 through 40-655.

Offshore structures, Offshore drilling, Ice loads, Sea ice distribution, Ice physics, Meetings, Ice pressure, Remote sensing, Subsea permafrost, Ocean bottom, Pressure ridges.

40-641

Keynote address: current Arctic offshore technology. Croasdale, K.R., Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.1-24, DE85003360.

Offshore structures, Offshore drilling, Ice conditions, Ice loads, Ice cover strength, Artificial islands, Caissons, Ice pressure, Sea ice, Platforms.

40-642

U.S. capability to support ocean engineering in the Arctic.

Perkins, D.W., Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.25-32, DE85003360, 5 refs.

Offshore structures, Ice mechanics, Ice conditions, Sea ice, Oil spills, Engineering.

40-643

Ice island generation and trajectories.

Sackinger, W.M., et al, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.33-45, DE85003360, 23 refs.

Serson, H.V., Yan, M.-H. Ice islands, Offshore structures, Offshore drilling, Ice loads, Stresses, Ice conditions.

40-644

Sheet ice forces on a conical structure: an experimental study.

Sodhi, D.S., et al, MP 1915, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.46-54, DE85003360, 11 refs.

Morris, C.E., Cox, G.F.N. Ice pressure, Offshore structures, Ice loads, Flexural strength, Ice cover thickness, Ice friction, Ice sheets, Surface properties, Ice mechanics, Velocity.

Small-scale experiments were performed to determine sheet ice forces on a conical structure. The experiments were conducted with a 45 deg. upward-breaking conical structure which had diameters of 1.5 m at the waterline and 0.33 m at the top. The surface of the structure was initially smooth, later it was roughened to investigate the effect of surface friction on the ice load. The thickness and the flexural strength of ice sheets were varied, and the tests were conducted at three fixed velocities. The measured ice forces agree well with the forces predicted by plastic limit analysis. There is no effect of velocity on the ice forces for tests conducted for a low coefficient of friction (0.1), whereas some velocity effect on the horizontal ice forces is found for tests conducted with the rough surface having a coefficient of friction equal to 0.5. The horizontal ice forces are higher at lower velocities. The size of the broken ice pieces, determined from a power spectrum analysis of the horizontal ice force records, was found to be about one-third of the characteristic length.

40-645

Measuring multi-year sea ice thickness using impulse radar.

Kovacs, A., et al, MP 1916, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.55-67, DE85003360, 6 refs.

Morey, R.M. Ice cover thickness, Remote sensing, Ice bottom surface, Ice structure, Radar echoes, Sea ice, Ice detection, Brines, Ice electrical properties.

Sounding of multi-year sea ice, using impulse radar operating in the 80- to 500-MHz frequency band, revealed that the bottom of this ice could not always be detected. It was found that the bottom of the ice could not be detected where the ice structure

had a high brine content. Because of brine's high conductivity, brine volume dominates the loss mechanism in first-year sea ice, and the same was found true for multi-year sea ice. Preliminary findings also indicate that a representative value for the apparent bulk dielectric constant of multi-year sea ice is 3.5. This represents an effective EM wavelet velocity of 0.16 in/na, which may be used to estimate multi-year sea ice thickness in cases where the ice bottom is detected in ice profile data.

40-646

Detailed morphology of the seafloor at the inner edge of the Stamukhi Zone, Beaufort Sea, Alaska.

Barnes, P.W., et al, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.68-78, DE85003360, 13 refs.

Asbury, J. Grounded ice, Pressure ridges, Ice mechanics, Ocean bottom, Geomorphology, Bottom topography, Marine geology, Ice erosion, Ice scouring, Beaufort Sea.

40-647

Processes and mechanisms responsible for the repetitive occurrence of the pack ice boundary shear zone. Shapiro, L., et al, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.79-90, DE85003360, 18 refs.

Barnes, P.W., Reimnitz, E. Pressure ridges, Ice physics, Boundary layer, Remote sensing, Fast ice, Pack ice, Ocean bottom, Shear properties, Sea ice.

40-648

Summertime sea ice intrusions in the Chukchi Sea. Stringer, W.J., et al, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.91-101, DE85003360, 7 refs.

Groves, J.E. Sea ice distribution, Remote sensing, Ice conditions, Ice edge, Computer applications, Seasonal variations, Statistical analysis, Chukchi Sea.

40-649

Corrosion protection of Arctic offshore structures. Sackinger, W.M., et al, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.102-116, DE85003360, 20 refs.

Rogers, D.C., Feyk, C., Theuvsen, B. Offshore structures, Corrosion, Steel structures, Electric equipment, Ice solid interface, Sea water, Concrete structures, Ice electrical properties, Countermeasures, Electrical resistivity, Scanning electron microscopy.

40-650

Determining the maximum ice keel depth in the Arctic Ocean.

Reimnitz, E., et al, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.117-125, DE85003360, 14 refs.

Barnes, P.W. Ice scoring, Icebergs, Ice bottom surface, Offshore structures, Impact strength, Ice loads, Bottom topography, Age determination, Bottom sediment, Ocean bottom, Beaufort Sea.

40-651

Preliminary simulation study of sea ice induced gouges in the sea floor.

Weeks, W.F., et al, MP 1917, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.126-135, DE85003360, 16 refs.

Tucker, W.B., Niedoroda, A.W. Ice scoring, Sediment transport, Ocean bottom, Bottom topography, Grain size, Bottom sediment, Beaufort Sea.

A simulation model for sea ice-induced gouges on the shelf of the Beaufort Sea is developed by assuming that the annual occurrence of new gouges is given by a Poisson distribution, the locations of the gouges are random, and the distribution of gouge depths is specified by an exponential distribution. Once a gouge is formed it is subject to infilling by transport of sediment into the region and by local movement of sediment along the sea floor. These processes are modeled by assuming a sediment input based on stratigraphic considerations and by calculating bed-load transport using methods from sediment transport theory. It is found that if currents are sufficient to transport sediment, rapid infilling of gouges occurs. In that these threshold currents are small for typical grain sizes on the Beaufort Shelf, this suggests that the gouging record commonly represents only a few tens of years.

40-652

**Mapping resistive seabed features using DC methods.** Sellmann, P.V., et al, MP 1918, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.136-147, DE85003360, 6 refs.

Delaney, A.J., Arcone, S.A.

**Subsea permafrost, Ocean bottom, Bottom sediment, Soil strength, Electric equipment, Mapping, Models.** Geophysical field observations of apparent resistivity using Wenner and dipole-dipole electrode arrays were made at several New England coastal sites. The objective was to assess the performance of these systems in detecting resistive seabed features as an indication of their potential for subsea permafrost mapping. Two sites on the Maine coast were used for observations on bedrock below a thin layer of sediments. A seaborne survey was then conducted in New Haven Harbor, Connecticut, at a site where the depth to bedrock below the seabed had been mapped by seismic methods and drilling several years earlier (U.S. Army Corps of Engineers 1981). The data gathered helped to define the range of apparent resistivity values expected in areas of subsea permafrost, the effect of water depth on the quality of a survey, and the vertical and lateral resolution capabilities of the arrays used. Good qualitative agreement between rock depth and resistivity was observed, even with rock depths up to 50 m below the seabed. Data were also collected in areas where seismic methods had been unable to extract subbottom information due to the gas content of local organic sediments.

40-653

**Well logging in permafrost.**

Petersen, J.K., et al, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.148-162, DE85003360, 21 refs. Kawasaki, K., Osterkamp, T.E., Scott, J.H. **Well logging, Permafrost physics, Boreholes, Drilling, Ground ice, Gamma irradiation, Tests, United States—Alaska.**

40-654

**Strength and consolidation properties of stiff Beaufort Sea sediment.**

Lee, H.J., et al, Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.163-172, DE85003360, 10 refs. Winters, W.J.

**Ocean bottom, Soil compaction, Soil strength, Freeze thaw cycles, Subsea permafrost, Bearing strength, Bottom sediment, Shear strength, Water content, Sea level, Marine geology, Beaufort Sea.**

40-655

**Seafloor seismic measurements in the southern Bering.**

Hickerson, J.P., Arctic Energy Technologies Workshop, Morgantown, WV, Nov. 14-15, 1984. Proceedings, U.S. Department of Energy, Morgantown Energy Technology Center, DOE/METC-85/6014, Apr. 1985, p.173-180, DE85003360, 9 refs. **Ocean bottom, Seismic surveys, Earthquakes, Off-shore drilling, Bottom sediment, Tectonics, Bering Sea.**

40-656

**Proceedings, Vol.2. Ground freezing.**

International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985, [Rotterdam, A.A. Balkema, 1985], 355p., Refs. passim. For individual papers see 40-657 through 40-714. For Vol.1 see 40-196 through 40-244.

Kinoshita, S., ed, Fukuda, M., ed.

**Frozen ground physics, Frozen ground strength, Engineering, Freeze thaw cycles, Meetings, Rheology, Frozen ground mechanics, Soil freezing, Artificial freezing.**

40-657

**Experimental measurements and a numerical method for ice sublimation.**

Aguirre-Puente, J., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.1-7, 13 refs.

Sakly, M., Goodrich, L.E., Lambrinos, G.

**Ice sublimation, Porous materials, Freeze drying, Mathematical models, Engineering, Temperature effects.**

40-658

**Attempt to formulate the problem of frost heaving in ground beneath roads analytically.**

Pietrzyk, K., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.9-15, 13 refs.

**Frost heave, Subgrade soils, Loads (forces), Frost penetration, Roads, Porosity, Grain size.**

40-659

**Frost susceptibility of a granular road base with high fines content.**

Gaskin, P.N., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.17-21, 3 refs.

Tester, R.E.

**Frost resistance, Roadbeds, Frost heave, Thaw weakening, Fines, Soil freezing, Seasonal freeze thaw, Design, Engineering.**

40-660

**Finite element models for structural creep problems in frozen ground.**

Soo, S., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.23-28, 7 refs.

Wen, R.K., Andersland, O.B.

**Frozen ground mechanics, Soil creep, Viscous flow, Tunnels, Soil structure, Plastic flow, Stresses, Strains, Mathematical models.**

40-661

**Creep strength, strain rate, temperature and unfrozen water relationship in frozen soil.**

Fish, A.M., MP 1928, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.29-36, 32 refs.

**Frozen ground strength, Soil creep, Strains, Frozen ground temperature, Unfrozen water content, Frozen ground physics, Compressive properties, Temperature effects, Analysis (mathematics).**

A relationship was developed between maximum (peak) strength, strain rate, strain, and temperature using data on uniaxial compression of remolded frozen Fairbanks silt obtained in the temperature range from -0.5 to -10°C at constant strain rates (CSR) that varied between 1/100 and 1/1,000,000/s. It is shown that three principal parameters of frozen soil define the magnitude of strength at a given strain rate: the instantaneous strength, the activation energy, and the strain hardening parameter all relate to each other. Their absolute values depend upon temperature and are linked with the simplest physical characteristics of soil and especially the ice and unfrozen water contents. The activation energy of frozen soil is presented as a sum of two components: activation energy of the soil skeleton and activation energy of the unfrozen water. The activation energy of frozen soil varied due to the changes of unfrozen water content between 16.6 and 13.2 kcal/mole.

40-662

**Bearing behaviour of frost shells in the construction of tunnels.**

Meissner, H., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.37-45, 15 refs.

**Frozen ground strength, Tunneling (excavation), Bearing strength, Artificial freezing, Walls, Water pressure, Settlement (structural), Strains, Analysis (mathematics).**

40-663

**Water content, electrical conductivity and temperature profiles in a partially frozen unsaturated soil.**

Mizoguchi, M., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.47-52, 7 refs.

Nakano, M.

**Frozen ground physics, Electrical resistivity, Unfrozen water content, Temperature distribution, Soil water, Saturation.**

40-664

**Laboratory studies on thermal conductivity of clay, silt and sand in frozen and unfrozen states.**

Sawada, S., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.53-58, 8 refs.

Ohno, T.

**Frozen ground physics, Thermal conductivity, Soil water, Temperature effects, Density (mass/volume), Saturation, Heat capacity.**

40-665

**Research for frost heave behavior of planosol.**

Jian, G., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.59-62, 4 refs.

**Frost heave, Soil structure, Frozen ground physics, Permeability, Saturation, Cohesion.**

40-666

**Some characters of clay column during freezing.**

Chen, X., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.63-67, 5 refs.

Wang, Y.

**Soil freezing, Clay soils, Unfrozen water content, Frost heave, Frost penetration, Freezing points.**

40-667

**Measurements of pressures developed in freezing water after the breakdown of supercooling.**

Horiuchi, Y., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.69-75, 7 refs.

Maeno, N.

**Freezing, Water pressure, Supercooling, Ice deformation, Compressive properties, Time factor.**

40-668

**Seasonal ground freezing in agricultural land and root breakage of alfalfa.**

Tsuchiya, F., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.77-81, 6 refs.

Maruyama, J., Komatsu, T.

**Soil freezing, Seasonal freeze thaw, Frost penetration, Roots, Agriculture, Snow accumulation.**

40-669

**Prediction of unfrozen water contents in frozen soils by a two-point or one-point method.**

Xu, X., et al, MP 1929, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.83-87, 5 refs.

Oliphant, J.L., Tice, A.R.

**Frozen ground, Unfrozen water content, Density (mass/volume), Temperature effects.**

The unfrozen water content in frozen soils, with different initial water content, dry density and molality, was determined by the nuclear magnetic resonance technique. Results show that the unfrozen water content in frozen morin clay changes with the initial water content and the dry density only within a range of three percent of the dry soil weight, and increases with the increase in the molality linearly because of the linear freezing point depression. The curves of the unfrozen water content vs temperature are quite parallel with the change in the initial water content and rotate a little bit counterclockwise with the increase in the dry density. On the basis of the data mentioned above, a two-point method by the measurements of two freezing points at two different initial water contents, and a one-point method by the measurement of the unfrozen water content at -1°C if the initial water content and its freezing point are given, is presented. Errors of predicting the unfrozen water content are 1-3% on the average for the two-point method and 1% or so for the one-point method.

40-670

**Thermal condition for ice lens formation in soil freezing.**

Takeda, K., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.89-94, 6 refs.

Nakazawa, J., Kinoshita, S.

**Ice lenses, Soil freezing, Frost heave, Heat flux, Frost resistance, Ice formation.**

40-671

**Thermal calculations for ground freezing with LN<sub>2</sub>.**

Jessberger, H.L., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.95-101, 5 refs.

Bässler, K.H., Jordan, P.

**Soil freezing, Tunneling (excavation), Heat capacity, Artificial freezing, Thermal conductivity, Pipes (tubes), Unfrozen water content.**

40-672

**Estimating method in freezing index.**

Kubo, H., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, [Rotterdam, A.A. Balkema, 1985], p.103-108, 4 refs.

Kumagai, S., Ueda, M.

**Freezing indexes, Frost heave, Frost penetration, Frost protection, Countermeasures.**

- 40-673**  
**Thermal neutron radiography for studying mass transfer in partially frozen soil.**  
Clark, A., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.109-114, 11 refs.  
Kettle, R.  
**Frozen ground physics, Mass transfer, Soil water migration, Ice lenses, Ice mechanics, Radiometry, Neutron irradiation, Phase transformations.**
- 40-674**  
**Mathematical model of ground movement due to thaw action in unsaturated soils.**  
Corapcioglu, M.Y., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.115-119, 6 refs.  
Panday, S.  
**Ground thawing, Soil mechanics, Thaw consolidation, Mathematical models, Saturation, Porous materials, Stresses, Strains.**
- 40-675**  
**Double layer progressive model and calculation of normal heaving force on base plate.**  
Yu, B., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.121-124, 2 refs.  
Qu, X.  
**Frost heave, Pressure, Frozen ground mechanics, Frozen ground physics, Foundations, Seasonal freeze thaw, Plates, Loads (forces).**
- 40-676**  
**Frost jacking forces on H and pipe piles embedded in Fairbanks silt.**  
Johnson, J.B., et al, MP 1930, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.125-133, 5 refs.  
Esch, D.C.  
**Frost heave, Pile extraction, Pipeline supports, Shear stress, Permafrost distribution, Foundations, Temperature effects, Frozen ground mechanics, Frost penetration, Countermeasures.**  
The magnitude and variation of forces and shear stresses, caused by soil frost heaving, for a pipe pile and an H pile were determined as a function of depth along the upper 3 m of the piles for two consecutive winters. The maximum frost heaving forces on the H pile during each winter were 943 kN and 899 kN. The maximum frost heaving force on the pipe pile was 703 kN. Maximum local shear stresses for the H pile were 1 MPa and 903 kPa for the two winters. The maximum local shear stress for the pipe pile was 896 kPa. Maximum average shear stresses over the two winters were 324 kPa and 427 kPa for the H pile and 324 kPa for the pipe pile. Maximum heaving forces and shear stresses occurred during periods of maximum cold and soil surface heave magnitude. These were not related to the depth of frost for most of the winter since the soil was frozen completely to the permafrost table.
- 40-677**  
**Field prediction of the uplift force to conduits due to frost heaving.**  
Fukuda, M., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.135-139, 4 refs.  
Kinoshita, S.  
**Frost heave, Underground pipelines, Pressure, Loads (forces), Frost penetration, Temperature variations, Tests.**
- 40-678**  
**Apparatus for determination of frost susceptibility of soils.**  
Stenberg, L., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.141-145, 2 refs.  
**Frost resistance, Roads, Frost heave, Pressure, Loads (forces), Frost forecasting, Measuring instruments, Freeze thaw cycles, Tests, Frost penetration, Heat transfer.**
- 40-679**  
**Experimental study on the relationship between frost heave and water content of the frozen soil.**  
Zhu, Q., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.147-151, 4 refs.  
Wu, F.  
**Frost heave, Water content, Frozen ground mechanics, Soil water, Measuring instruments, Experimentation.**
- 40-680**  
**Frost heave behavior of cohesive soil due to loading.**  
Xie, Y., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.153-156, 4 refs.  
Wang, J.  
**Frost heave, Loads (forces), Soil compaction, Seasonal freeze thaw, Cohesion, Tests.**
- 40-681**  
**Field frost heaving test on diluvial clayey soil.**  
Goto, S., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.157-162.  
Tanaka, M.  
**Frost heave, Clay soils, Soil freezing, Frost penetration, Frozen ground mechanics, Soil water migration, Frost resistance, Tests.**
- 40-682**  
**Frost heaving of volcanic ash soils.**  
Soma, K., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.163-166, 4 refs.  
Maeda, T.  
**Frost heave, Volcanic ash, Soil water, Water content, Soil freezing, Density (mass/volume), Frozen ground physics, Water retention.**
- 40-683**  
**Frost heave behavior of cohesive soils under three kinds of consolidated state.**  
Xu, S., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.167-169, 2 refs.  
**Frost heave, Soil compaction, Pressure, Stresses, Soil freezing, Seasonal freeze thaw, Cohesion, Tests.**
- 40-684**  
**Effect of sample preparation on the strength of artificially frozen sand.**  
Baker, T.H.W., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.171-176, 9 refs.  
Konrad, J.M.  
**Frozen ground strength, Sands, Soil structure, Frozen ground mechanics, Soil water, Artificial freezing, Density (mass/volume), Deformation, Loads (forces), Water content, Stresses.**
- 40-685**  
**Stress-strain characteristics of an artificially frozen sand in uniaxially compressive tests.**  
Kuribayashi, E., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.177-182, 4 refs.  
Kawamura, M., Yui, Y.  
**Frozen ground strength, Sands, Stress strain diagrams, Soil freezing, Artificial freezing, Compressive properties, Tests, Temperature effects, Saturation.**
- 40-686**  
**Unified laboratory methods for determining strength and deformability properties of frozen soils.**  
Vialov, S.S., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.183-187.  
Gorodetskiy, S.E., Maksimiak, R.V., Sadovskiy, A.V.  
**Frozen ground strength, Frozen ground mechanics, Ground thawing, Artificial freezing, Deformation, Engineering, Tests, Compressive properties.**
- 40-687**  
**Shear strength anisotropy in frozen saline and fresh-water soils.**  
Chamberlain, E.J., MP 1931, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.189-194, 2 refs.  
**Frozen ground strength, Shear strength, Anisotropy, Salinity, Clay soils, Sands, Tests.**  
The shear strength anisotropy of frozen freshwater and seawater clay and sand soils was investigated using the direct shear technique. Samples were sheared at angles of 0, 30, 60 and 90 degrees between the shear and freezing planes. Because of variations in sample density, there was considerable scatter in the data. This scatter and the relationship of the maximum shear strength to the angle between the shear and freezing planes were accounted for by conducting multiple linear regression analysis on empirical equations relating the test variables to the shear strength.
- 40-688**  
**Determination of rheological parameters of frozen soils by laboratory tests.**  
Gonze, P., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.195-200, 9 refs.  
Lousberg, E., Thimus, J.F.  
**Frozen ground mechanics, Rheology, Soil creep, Soil water, Stresses, Temperature effects, Tests, Computer programs, Compressive properties.**
- 40-689**  
**Cyclic creep of frozen soils.**  
Parameswaran, V.R., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.201-206, 9 refs.  
**Frozen ground mechanics, Soil creep, Sands, Clays, Rheology, Stresses, Loads (forces), Unfrozen water content, Strains, Deformation, Tests.**
- 40-690**  
**Results of triaxial compression tests and triaxial creep tests on an artificially frozen stiff clay.**  
Ouvry, J.F., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.207-212, 7 refs.  
**Frozen ground mechanics, Soil creep, Clays, Temperature effects, Unfrozen water content, Artificial freezing, Compressive properties, Rheology, Deformation, Stress strain diagrams.**
- 40-691**  
**Formation of soil structure under repeated freezing-thawing conditions.**  
Skarzynska, K.M., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.213-218, 7 refs.  
**Freeze thaw cycles, Soil structure, Soil water, Scanning electron microscopy, Cryogenic textures, Temperature effects, Ice lenses, Tests.**
- 40-692**  
**Effects of the freeze-thaw process on soil structure.**  
Nagasawa, T., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.219-224, 11 refs.  
Umeda, Y.  
**Soil structure, Freeze thaw cycles, Soil freezing, Ground thawing, Soil water, Frozen ground mechanics, Ground ice, Water retention, Phase transformations, Deformation, Porosity.**
- 40-693**  
**Thermal-physical characteristics of frozen, thawing and unfrozen grounds.**  
Gur'ianov, I.E., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.225-230, 9 refs.  
**Frozen ground physics, Freeze thaw cycles, Ground thawing, Soil physics, Heat capacity, Soil water, Thermal conductivity, Porosity, Plastic properties, Unfrozen water content, Phase transformations.**
- 40-694**  
**Influence of specimen end conditions and slenderness ratio on the mechanical properties of frozen soils.**  
Ebel, W., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.231-236, 7 refs.  
**Frozen ground mechanics, Compressive properties, Sampling, Stress strain diagrams, Surface properties, Tests.**
- 40-695**  
**Mechanical behaviour of a frozen clay down to cryogenic temperatures.**  
Bourbonnais, J., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol. 2, [Rotterdam, A.A. Balkema, 1985], p.237-244, 21 refs.  
Ladanyi, B.  
**Frozen ground mechanics, Clays, Low temperature tests, Cryogenic soils, Microstructure, Artificial freezing, Frozen ground strength, Strains, Temperature effects.**

40-696

Report on the Committee of Mechanical Properties of Frozen Soils in the Japanese Society of Soil Mechanics and Foundation Engineering.

Kinoshita, S., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.245-246.

Ryokai, K.

Frozen ground mechanics, Construction materials, Soil freezing, Artificial freezing, Organizations, Tests, Compressive properties.

40-697

Development of a new triaxial cell with self-cooling system (TCWCS) for testing ice and frozen soils.

Youssef, H., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.247-252, 17 refs.

Frozen ground mechanics, Frozen ground physics, Ice physics, Measuring instruments, Deformation, Tests, Computer programs.

40-698

Application of freezing method to construction of tunnel through weathered granite ground.

Murayama, S., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.253-258, 3 refs.

Momtani, S., Matsumoto, Y.

Soil freezing, Tunneling (excavation), Rock excavation, Roads, Artificial freezing, Settlement (structural), Countermeasures, Forecasting.

40-699

Experimental and numerical investigations for frozen tunnel shells.

Orth, W., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.259-262.

Meissner, H.

Artificial freezing, Frozen ground strength, Tunneling (excavation), Soil freezing, Strain tests, Soil creep, Models.

40-700

Ground freezing for the construction of the Milchbuck road tunnel in Zurich, Switzerland—an engineering task revolving between theory and practice.

Mettier, K., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.263-269, 5 refs.

Soil freezing, Artificial freezing, Tunneling (excavation), Roads, Frozen ground strength, Engineering, Frost heave, Frozen ground mechanics.

40-701

On the devices for measuring frost penetration.

Yahagi, H., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.271-276, 8 refs.

Frost penetration, Soil freezing, Measuring instruments, Frost heave, Freeze thaw cycles.

40-702

Deformational behavior of a tunnel in permafrost.

Huang, S.L., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.277-282, 5 refs.

Speck, R.C.

Permafrost thermal properties, Soil creep, Tunnels, Rheology, Deformation, Frozen ground temperature, Geology, Temperature variations, Time factor.

40-703

Mechanical characteristics of rock in refrigerated underground cavern.

Soeda, K., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.283-288, 4 refs.

Nishimaki, H., Sekine, I.

Frozen rocks, Rock mechanics, Storage tanks, Frozen ground strength, Compressive properties, Anisotropy, Thermal properties, Acoustics, Tests.

40-704

Actual results of ground freezing in Japan.

Ohrai, T., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.289-294, 11 refs.

Ishikawa, Y., Kushida, Y.

Soil freezing, Artificial freezing, Engineering, Frost penetration, Ground thawing, Tunnels, Walls, Sewage, Frost heave, Japan.

40-705

Design of insulating base for culvert sluice.

Yu, B., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.295-300, 2 refs.

Qu, X.

Culverts, Sluices (hydraulic engineering), Seasonal freeze thaw, Frost penetration, Thermal insulation, Foundations, Design, Countermeasures, Deformation.

40-706

Double-layer grease casting for preventing and treating frost extraction of pile foundation.

Sui, T., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.301-305.

Na, W.

Lubricants, Pile extraction, Frost action, Frost heave, Foundations, Antifreezes, Countermeasures, Casting.

40-707

Influence of friction angle on stress distribution and deformational behaviour of freeze shafts in nonlinear creeping strata.

Klein, J., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.307-315, 5 refs.

Frozen ground mechanics, Shafts (excavations), Soil creep, Friction, Stress strain diagrams, Linings, Deformation, Viscosity, Cohesion, Temperature effects.

40-708

Study of frost damage for retaining wall of small-scale hydraulic engineering.

Xia, Z., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.317-322, 5 refs.

Frost heave, Walls, Hydraulic structures, Cracking (fracturing), Freeze thaw cycles, Stresses, Damage, Frost action, Engineering, Retaining walls.

40-709

Discussion about the heave and force on the pile in seasonal frozen zone.

Sui, X., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.323-327, 4 refs.

Zuo, L.

Frost heave, Pile extraction, Loads (forces), Seasonal freeze thaw, Frozen ground mechanics, Foundations, Frost penetration, Countermeasures, Analysis (mathematics).

40-710

Frost damage of water-conduits.

Sasaki, T., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.329-334, 2 refs.

Frost heave, Water pipes, Pipeline freezing, Freeze thaw cycles, Underground pipelines, Countermeasures, Thermal insulation, Tests.

40-711

Ground frost regime regulation at the base of above-mine buildings.

Mel'nikov, P.I., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.335-340, 4 refs.

Frozen ground temperature, Foundations, Mine shafts, Thermal regime, Ventilation, Mathematical models, Heat transfer, Seasonal freeze thaw, Protection.

40-712

Experimental study on prevention of frost heave using heat pipe.

Fukuda, M., et al, International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.341-346, 3 refs.

Frost heave, Heat pipes, Countermeasures, Antifreezes, Frost penetration, Tests.

40-713

Gyro-inclinometer-continuous measuring in a drilling hole.

Guo, G., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.347-349.

Boreholes, Freezing, Shaft sinking, Countermeasures, Accuracy, Measuring instruments.

40-714

Calculation of the slope stability of the subgrade in permafrost regions.

Yang, H., International Symposium on Ground Freezing, 4th, Sapporo, Japan, Aug. 5-7, 1985. Proceedings, Vol.2, (Rotterdam, A.A. Balkema, 1985), p.351-355, 2 refs.

Slope stability, Permafrost preservation, Subgrades, Shear strength, Freeze thaw cycles, Artificial freezing, Soil freezing, Water content, Soil water, Sliding.

40-715

Problems of using and protecting the soils of Siberia and the Far East. (Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka).

Kovalev, R.V., ed, Novosibirsk, Nauka, 1984, 241p., in Russian. For selected papers see 40-716 through 40-729. Refs. passim.

Taiga, Mapping, Soil formation, Land reclamation, Photographic reconnaissance, Organic soils, Peat, Drainage, Cryogenic soils, Photointerpretation, Environmental protection, Trenching, Soil profiles.

40-716

Paludification of central taiga soils in western Siberia. (Zabolachivanie pochv Srednei taigi Zapadnoi Sibiri).

Geras'ko, L.I., et al, Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.32-37, in Russian.

Pologova, N.N.

Cryogenic soils, Soil profiles, Taiga, Paludification, Drainage, Trenching.

40-717

Ways of taiga soil development in the Ob'-Irtys' area. (Puti razvitiia pochv taizhnogo Ob'-Irtys'ia).

Sazonov, A.G., Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.41-45, in Russian. 11 refs.

Soil formation, Taiga, Alluvium, Cryogenic soils, Climatic changes, Paleoclimatology.

40-718

Swamp soils near the upper Kolyma River. (Bolotnye pochvy verkhov'ev Kolymy).

Orlovskaya, K.V., Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.54-58, in Russian. 3 refs.

Swamps, Permafrost distribution, Drainage, Vegetation, Active layer, Permafrost depth, Subarctic regions, Peat.

40-719

Some chemical properties of fine-grained soil fractions in the Barguzin basin. (Nekotorye khimicheskie svoystva fraktsii melkozemna pochv Barguzinskoi kotloviny).

Zaitseva, T.F., et al, Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.75-81, in Russian. 10 refs.

Riabova, T.N.

Frozen fines, Soil freezing, Clay soils, Chernozem, Cryogenic soils, Soil composition, Meadow soils, Soil chemistry.

40-720

**Peculiarities and regional differences of soil covers in the areas west of Lake Baykal and in northern Transbaikalia.** (Svoeobrazie i regional'nye razlichia pochvennogo pokrova Predbaikalia i Severnogo Zabaikalia). Kuz'min, V.A., Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.105-109, In Russian. 10 refs.

**Forest soils, Taiga, Soil formation, Surface properties, Cryogenic soils, Soil profiles.**

40-721

**Soil cover structure in western Transbaikalia.** (Struktura pochvennogo pokrova Zapadnogo Zabaikalia). Tsybzhitov, Ts.Kh., et al, Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.110-114, In Russian. 10 refs.

**Cryogenic soils, Landscape types, Tundra, Alpine landscapes, Meadow soils, Peat.**

40-722

**Soil cover peculiarities of the Stanovoy Range within South Yakutia.** (Osobennosti pochvennogo pokrova Stanovogo khrebra v predelakh Iuzhnoi Iakutii). Malinin, O.I., et al, Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.121-124, In Russian.

**Bazhenov, V.S., Gorshkov, L.V. Cryogenic soils, Alpine landscapes, Polygonal topography, Patterned ground, Tundra.**

40-723

**Soil cover in slope landscapes of the Upper Kolyma Highlands.** (Pochvennyi pokrov sklonovykh landshaftov Verkhnekolym'skogo nago'ia). Mazhitova, G.G., Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.125-131, In Russian. 5 refs.

**Alpine tundra, Soil formation, Slope processes, Cryogenic soils, Maps, Paludification, Geocryology.**

40-724

**Mountain-forest soils of the Lake Baykal basin and their resistance to erosion.** (Pochvy gornykh lesov basseina oz. Baikal i ikh protivoozernnaya ustoi-chivost'). Krasnoshechekov, I.U.N., Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.135-139, In Russian. 4 refs.

**Forest soils, Cryogenic soils, Soil erosion, Taiga.**

40-725

**Prospects for land development in the BAM zone.** (Perspektivy osvoeniia zemel' v zone BAM). Biriukov, V.V., et al, Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.189-192, In Russian. 2 refs.

**Kulish, N.V. Forest soils, Soil erosion, Revegetation, Cryogenic soils, Active layer, Baykal Amur railroad, Permafrost depth, Economic development, Human factors.**

40-726

**New interpretation of properties and structural peculiarities of soils in Priangara.** (Novaia interpretatsiia osobennostei stroeniia i svoistv pochv Priangarii). Vorob'eva, G.A., et al, Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.196-200, In Russian. 5 refs.

**Korzun, M.A. Permafrost beneath rivers, Cryogenic soils, Soil profiles, Soil composition, Permafrost hydrology, USSR—Angara River.**

40-727

**Hydromellioration problems and the interrelations of forests and swamps.** (Problemy gidromellioratsii i vzaimootnosheniia lesa i bolot). Glebov, F.Z., Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.200-205, In Russian. 3 refs.

**Taiga, Paludification, Land reclamation, Grasses, Mosses, Plant ecology.**

40-728

**Principles of photograph standardization when mapping cryogenic taiga soils of southern Yakutia from aerial surveying data.** (Printsipy fotoetalonirovaniia pri kartirovanii merzlotno-taezhnykh pochv Iuzhnoi Iakutii po materialam aerofotosnimki). Malinin, O.I., et al, Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.218-223, In Russian.

**Gorshkov, L.V., Riabikin, A.V. Aerial surveys, Photographic reconnaissance, Mapping, Photointerpretation, Soil mapping, Cryogenic soils.**

40-729

**Mapping and regionalization of taiga soils on the basis of satellite photography.** (Kartirovanie i rafionirovanie taezhnykh pochv na osnove aerokosmicheskikh snimkov). Konstantinov, V.D., Problemy ispol'zovaniia i okhrany pochv Sibiri i Dal'nego Vostoka (Problems of using and protecting the soils of Siberia and the Far East) edited by R.V. Kovalev, Novosibirsk, Nauka, 1984, p.223-228, In Russian.

**Cryogenic soils, Taiga, Spaceborne photography, Photointerpretation, Landscape types.**

40-730

**Australian glaciological research 1982-1983.** Jacka, T.H., ed, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, 206p., Refs. passim. For individual papers see 40-731 through 40-757, or F-32543 through F-32551, F-32557 through F-32570, I-32554 through I-32556, J-32552, and J-32553.

**Ice, Snow, Climate, Glaciology.**

The papers collected in this volume were presented at a meeting held in Melbourne, Australia, May 23-25, 1984, the purpose of which was to review advances made in Australia in glaciological and related research projects in 1982 and 1983. The majority of the papers represent preliminary data from recent antarctic field studies, laboratory experiments, modelling studies, and analysis of earlier data.

40-731

**Enhanced shear zone in ice flow. Implications for ice cap modelling and core dating.** Morgan, V.I., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.4-9, 12 refs.

**McCray, A.P. Isotopes, Ice models, Shear properties, Ice dating, Rheology, Ice creep, Antarctica—Law Dome.**

Oxygen isotope profiles for Law Dome boreholes can be used to deduce ages for the deep ice either by detecting annual layers or by comparison of known climatic features. Preliminary data from a recent ice drilling program is presented which will be used with a simple ice particle flow model to try to duplicate these ages by adjustment of various parameters, principally the vertical velocity profile to compensate for stagnant basal ice layers and the amount of snow accumulation in line with variations suggested by the ice core data. (Auth.)

40-732

**Dynamics of the Law Dome ice cap from borehole measurements.** Etheridge, D.M., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.10-17, 7 refs.

**McCray, A.P. Orientation, Ice deformation, Ice temperature, Rheology, Velocity measurement, Ice creep, Antarctica—Law Dome.**

Boreholes BHC1 and BHC2 on Law Dome have been logged for orientation, diameter and temperature over a large enough time interval to allow the dynamics of the ice sheet to be determined. Orientation measurements are analysed to give the horizontal deformation profile. Borehole diameter records are used to give vertical strains. This data, together with temperature profiles, surface velocity data and bedrock relief, describe the flow regime of the ice sheet in the region. (Auth.)

40-733

**Multilayer crystallographic structure of Law Dome from ice core analysis.** Young, N.W., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.18-24, 12 refs.

**Xie, Z., Qin, D. Shear stress, Ice crystal structure, Bubbles, Ice crystal size, Rheology, Ice creep, Antarctica—Law Dome.**

An ice core from Law Dome has been analysed for crystal orientation fabric, crystal size and bubble elongation. Crystal size initially increases with depth then decreases to a minimum at about 60% depth in conjunction with the development of a strong vertical single-maximum fabric. In the remainder of the thickness there is an interleaving of coarse-grained multiple-maximum fabric ice with fine-grained single-maximum fabric ice. The initial single-maximum fabric develops under the influence of a shear stress increasing with depth. Closer to the bed there can be zones with a relative maximum in the shear stress some distance above the rough bed topography. It appears that single-maximum fabrics develop under the influence of the high shear stress where the trajectory of the ice intersects these zones. In the intervening zones the fabric may change to a multiple-maximum type and the crystals grow very large, where the stress is relaxed and the simple shear is small. The pattern of variation of the air bubbles in the ice confirms this general picture. (Auth.)

40-734

**Snow accumulation and oxygen isotope records in two adjacent ice cores.** Morgan, V.I., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.25-31, 5 refs.

**Isotopes, Snow accumulation, Climatology, Ice composition, Antarctica—Law Dome.**

Detailed oxygen isotope analysis of two adjacent ice cores are compared and differences in the delta profiles are explained by the mechanisms of snow accumulation and redistribution by wind. Effects on different time scales are apparent and the significance of this is discussed in the context of using delta records as proxy climatic data. (Auth.)

40-735

**Gas extraction and analysis from antarctic ice cores.** Etheridge, D.M., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.32-35, 8 refs.

**Bubbles, Ice composition, Paleoclimatology, Carbon dioxide.**

The significance of recently observed increases in atmospheric CO2 concentration depends on what concentrations were in the past. It is now considered that air occluded as bubbles in polar ice represents the best available source for determining these past concentrations. The critical step in the reconstruction of past atmospheric composition is the extraction of these bubbles. The Antarctic Division Glaciology Section and the CSIRO Division of Atmospheric Research are currently involved in a program to extract and analyze the air from antarctic ice cores. The techniques used and some preliminary results are discussed. (Auth.)

40-736

**Evidence of Southern Hemisphere warming from oxygen isotope records of antarctic ice.** Wishart, E.R., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.36-44, 12 refs.

**Ice composition, Air temperature, Paleoclimatology, Isotopes, Antarctica—Casey Station, Antarctica—Law Dome, Antarctica—Mizuho Station.**

Comparison of a delta 180 record from Law Dome with mean annual temperature records from Casey, about 150 km west of Law Dome, over the period 1957 to 1977 gave no correlation. However, when the delta 180 record was smoothed over long time scales, good qualitative agreement was made with New Zealand temperatures for the period 1853-1975, sea surface temperature data for 1880-1977 and a delta 180 record from Mizuho Station from about 1600 to 1900. On this basis the period around 1800 was the coldest period for over 2100 a BP with cooling around 1900 and fairly steady warming to at least 1977. (Auth.)

40-737

**Characteristics of sea ice in the Casey region.** Allison, I., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.47-56, 10 refs.

**Qian, S. Sea ice, Snow depth, Ice heat flux, Ice composition, Ice growth, Ice formation, Antarctica—Casey Station.**

Sea ice growth and characteristics were measured at a number of sites in Newcomb Bay near Casey, throughout 1983. The ice in this region is highly unstable, breaking out frequently in strong winds during winter months and then reforming. There appears to be little heat flux from the ocean to the underside of the ice at this site. The growth of the ice cover is controlled almost solely by conduction through the ice which is modified by a snow cover during the winter, although oceanic heat flux may be important when the ice starts to thin in summer. (Auth.)

40-738

Sea ice observations during ADBEX, 1982. Streten, N.A., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.57-58.

Pike, D.J.

Polyanas, Sea ice distribution, Antarctica—Prydz Bay.

During the ADBEX (Antarctic Division BIOMASS Experiment) cruise of November-December, 1982, a broadscale analysis of the extent and concentration of sea ice in the Prydz Bay region was made using shipboard and aerial observations in conjunction with USSR and US satellite data read out at Davis Station and on the relief vessel, *Nella Dan*. Further comparisons were made with coincident and longer term data derived from the NOAA-US Navy Joint Ice Centre (JIC) charts. (Auth.)

40-739

Updating the sea ice and climate monitoring program. Jacka, T.H., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.59-62, 3 refs.

Christou, L., Cook, B.J.

Sea ice distribution, Air temperature, Antarctica.

The 1983 Navy-NOAA Joint Ice Centre sea ice maps have been computer digitized. Sea ice extents are plotted along with data from previous years (Jacka, 1983), and anomalies noted. Annual mean surface temperatures from most antarctic and southern ocean stations have also been updated to 1983. These data are used to compile mean southern ocean and mean antarctic temperature anomaly plots from which climatic trends are investigated.

40-740

Seasonal variations in water structure under antarctic sea ice.

Allison, I., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.63-69, 6 refs.

Sea water, Ice cover effect, Sea ice.

Water salinity and temperature profiles, measured throughout the year under coast fast sea ice and in open water, are presented for a site near Mawson, Antarctica. These data are used to illustrate the role of sea ice in determining the structure of water on the antarctic continental shelf. Not all features evident in the water structure at this site however are attributable to the cycle of ice growth and decay. Meltwater input from the continental ice sheet in summer, and ocean advection throughout the year are also important processes. (Auth.)

40-741

Observations of water mass modification in the vicinity of an iceberg.

Allison, I., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.70-80, 8 refs.

Kerry, K., Wright, S.

Icebergs, Sea water, Meltwater.

Measurements of water salinity and temperature profiles to 500 m depth were made at various close distances around two icebergs. The T-S relationship of water around the first iceberg, which was in circumpolar deep water, suggests that convection alongside the iceberg is responsible for some of the observed changes, and that melt is occurring at considerable depth. In contrast, the second iceberg, which was in cold shelf water, was melting only at depths above the seasonal halocline. There was no deep convection alongside the iceberg. Other water characteristics that appear to be associated with the iceberg were observed around the second iceberg. Water of a different characteristic than the bulk of the column is found at depths from 200 to 350 m around and behind the iceberg, but not in front. This may be associated with entrainment of a water mass by the iceberg. (Auth. mod.)

40-742

Diurnal variability of the surface wind and air temperature at an inland antarctic site: 2 years of AWS data.

Allison, I., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.81-92, 12 refs.

Albedo, Glacial meteorology, Blowing snow, Wind (meteorology).

Two years of data from an automatic weather station have been analyzed to show diurnal variability of surface air temperature, temperature gradient (1 to 2 m and 2 to 4 m above the surface), wind speed and wind direction. All elements show a large diurnal variability in summer, no variability in winter, and an identical transition situation for autumn and spring initially difficult to explain: the diurnal variation in the temperature profile is of opposite phase to that observed in summer and is most non-logarithmic around midday. It is suggested that this is due to airborne drift snow at the site which absorbs short wave radiation and results in relatively greater heating of the atmosphere at some distance above the surface. (Auth. mod.)

40-743

Utility of meteorological observations made at the S2 glaciological station, Antarctica in 1957.

Phillip, H.R., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.93-98, 6 refs.

Glacial meteorology, Blowing snow, Antarctica—Wilkes Station.

The problems posed by the poor understanding of the weather and climate of the antarctic continent, particularly in the short-term variations of the surface wind behavior on the coastline of East Antarctica, are discussed. An examination of the S2 data and comparison with the corresponding surface observations in conjunction with the extensive upper air observations from Wilkes, throw new light on the surface wind behavior in the coastal sector. Unfortunately no specific conclusions can be drawn; nor is it believed, will any be possible until the availability of satellite cloud imagery permits the centers of action to be identified and tracked near the station, but the value of meteorological observations from a site such as S2 is demonstrated. (Auth. mod.)

40-744

Engineering properties of snow.

Russell-Head, D.S., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.106-108, 5 refs.

Snow compaction, Runways, Snow compression, Engineering, Bearing tests, Antarctica—Casey Station.

An important engineering property of antarctic snow is its ability to resist surface penetration. Wheel loadings on laboratory-made snow and antarctic snow have been assessed by bearing tests. The prospects for constructing a compressed snow runway near Casey for use by heavy aircraft are discussed. (Auth.)

40-745

Effect of sample length and diameter on ice minimum creep rates in compression.

Williams, S.A., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.109-113, 10 refs.

Jacka, T.H.

Strain tests, Ice creep, Ice deformation, Ice crystal size.

Uniaxial compression tests were performed on cylindrical ice samples of various lengths and diameters. All tests were carried out at -50°C and under an octahedral shear stress of 0.25 MPa. Sample diameters ranged from 16.2 to 64.9 mm while lengths were 17.4 to 132.3 mm. It was found that minimum flow rate was dependent on sample diameter, yet independent of length. The studies also revealed no crystal size dependence on flow rate, and no sample size/crystal size ratio dependence. (Auth.)

40-746

Studies of the effect of stress and temperature on the shape of ice creep curves.

Jacka, T.H., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.114-117, 4 refs.

Ice creep, Strain tests, Ice deformation, Thermal stresses.

It has been established elsewhere that plots relating time, strain and strain rate for ice deformation exhibit similar curves. In this paper, strain curves reported by Jacka (1984) are normalized such that the minimum strain rate, and the strain to minimum strain rate are forced to values of 1. These normalized raw data exhibit a scatter of points which are discussed in terms of test temperature and stress. (Auth.)

40-747

Shear deformation of ice to large strains.

Russell-Head, D.S., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.118-121, 3 refs.

Ice creep, Strain tests, Ice deformation.

A number of samples of laboratory-made ice have been deformed in parallel-plate shear apparatus to strains of 100%. The strain rates in the constant stress tests exhibit both a minimum and a maximum. A new type of shear deformation apparatus, which may overcome some of the problems inherent to the present test system, is discussed. (Auth.)

40-748

In situ recrystallization of polycrystalline ice.

Wilson, C.J.L., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.122-129, 27 refs.

Mitchell, J.C., Burg, J.P.

Ice creep, Ice crystals, Ice models, Recrystallization, Ice deformation, Thermal stresses.

Experimental deformation of ice above -5°C produces dynamic recrystallization by rotation of subgrains and/or bulging of new high angle or pre-existing boundaries, through a process of migration recrystallization. Recrystallized grains in the boundary of an old grain undergo the greatest degree of rotation and also show the highest grain boundary mobility. Superimposed on these phenomena there may be post-deformation "recovery annealing" which produces local boundary migration with a further reduction of the internal strain energy. (Auth.)

40-749

Numerical modelling of ice stream flow with sliding.

Budd, W.F., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.130-137, 10 refs.

Jenssen, D., McInnes, B.J.

Ice creep, Ice models, Glacier ice, Ice crystals, Antarctica—Ross Ice Shelf.

Many outlet glaciers and ice streams of Antarctica have basal shear stresses which increase from the interior to a maximum at some considerable distance inland of the grounding line then decrease to near zero at the grounding line. Although trans-

verse and longitudinal stresses need also to be considered, the main control of the flow is the down slope driving stress which is approximately in equilibrium with the basal shear stress. Empirical sliding studies show that the sliding velocities increase also with decreasing normal stress which also occurs in the ice streams as they approach the grounding line. In addition, the basal temperature distribution can strongly influence the sliding. Two-dimensional and three-dimensional modelling of ice stream flow has been used to derive the effective sliding parameters and explain the broadscale dynamics and flow regime of ice streams in West Antarctica and other regions. (Auth.)

40-750

Three-dimensional modelling of ice dynamics in West Antarctica.

Jenssen, D., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.138-145.

Budd, W.F.

Ice models, Velocity measurement, Ice creep, Antarctica—West Antarctica.

A simple method of computing flowlines objectively for any large ice mass is described. By integrating the accumulation along any one flowline, and assuming no change in the ice shape with time, balance velocity along the line is determined. By treating many such lines, the full balance velocity field may be found. The scheme is checked on mathematically prescribed fields for which the analytic velocity is known. The method is then applied to the West Antarctic and the results are critically discussed. (Auth.)

40-751

Finite element analysis of two-dimensional longitudinal section flow on Law Dome.

Budd, W.F., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.153-161, 15 refs.

Rowden-Rich, R.J.M.

Ice creep, Ice models, Shear stress, Velocity measurement, Anisotropy, Antarctica—Law Dome.

Finite element analysis provides a powerful technique for studying the variation of stress and strain rates for ice flow over irregular beds. A 15 km longitudinal section of Law Dome approximately along a flow line for which data from 4 deep boreholes is available was chosen for a detailed study. In the first instance ice flow was taken to depend only on stress and temperature, to derive the stress and strain rate fields which give rise to the development of the anisotropy. The added dependence of the ice flow on the anisotropy can then be used to recompute the flow regime. (Auth. mod.)

40-752

Glaciological measurements in eastern Wilkes Land, Antarctica.

Jones, D.J., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.164-173, 11 refs.

Hendy, M.

Bottom topography, Snow accumulation, Ice surface, Glacier mass balance, Velocity measurement, Antarctica—Wilkes Land.

Data on ice surface and bedrock topography, ice surface velocity and snow accumulation rate are presented from a traverse route in eastern Wilkes Land, Antarctica, approximately along the 69°S parallel of latitude between 112°E and 131°E longitude. These data are used to calculate the mass outflow through this sector near the edge of the ice sheet. Comparison of the outflow with the estimated mass influx suggests that, within the limits of accuracy, this area of Antarctica is not significantly out of balance. (Auth.)

40-753

Glaciological measurements in western Wilkes Land, Antarctica.

Medhurst, T.G., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.174-179, 5 refs.

Ice surface, Snow accumulation, Snow temperature, Bottom topography, Antarctica—Wilkes Land.

During 1983 a new traverse route was established along latitude 68°30'S between longitude 112°04'E (B029) and 94°34'(GM04), a distance of 725 km. Fourteen new ice movement stations were established. Similarly 190 km of traverse route and two new ice movement stations were established inland of the Vanderford Glacier. Surface and bedrock profiles, along with a range of other glaciological measurements were obtained on all routes. A summary of measurements made with relevant comment is given. (Auth.)

40-754

Glaciological measurements on the 1983-1984 Soviet traverse from Mirny to Dome C.

Hamley, T., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.180-184, 4 refs.

Ice creep, Velocity measurement.

An invitation to participate in the 1983/84 Mirny to Dome C traverse provided an opportunity to complete the remeasurement of ice-movement markers already established on four previous visits by Australian glaciologists since 1976/77. Some markers had not been remeasured and others required further remeasurement. Surface ice velocity data from the survey are presented here.

40-755

**Vanderford Glacier topographic survey.** Jones, D.J., et al, *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.185-190.

**Glacier ice, Ice surface, Ice surveys, Ice bottom surface, Gravity, Velocity measurement, Antarctica—Vanderford Glacier.**

A comprehensive airborne topographic and ice thickness survey of the Vanderford Glacier, 30 km south of Casey Station, is reported. 3500 sq/km of the glacier have been covered by an approximately 5 km grid. Bedrock topography was measured in detail with an ANARE ice radar or obtained with a gravity meter. Ice surface velocity measurements at ten locations near the snout of the glacier show that about 5 sq km/a of ice is draining through the Vanderford system. Bedrock topography shows a very pronounced feature in which the glacier lies and gravity measurements show approximately where the glacier begins to float. (Auth. mod.)

40-756

**Instrumentation and operational procedures used on the Vanderford Glacier survey program.**

Davis, E., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.192-195.

**Ice surveys, Glacier ice, Instruments, Antarctica—Vanderford Glacier.**

This note provides a brief overview of instrumentation and procedures used on the 1983/84 austral summer Vanderford Glacier survey program which included: surface and subsurface profiling of 2500 sq km of the glacier; gravity survey in the snout region of the glacier; ice velocities survey in the snout region of the glacier; surface and subsurface profiling of an existing grid system on Law Dome, and profiling of the coast between the Vanderford Glacier and Hatch I. (Auth. mod.)

40-757

**Shallow-core collecting mechanical ice drill.**

Wehrle, E., *Australian National Antarctic Research Expeditions. ANARE research notes*, Sep. 1985, No.28, p.196-201.

**Ice coring drills.**

A portable electro-mechanical ice drill is described. The drill is intended to obtain 1 m long ice cores, in a dry hole, to a maximum depth of 200 m. It is to be used on inland Antarctic traverses and thus, must be easy to operate and maintain. (Auth.)

40-758

**Supplement to the National Building Code of Canada, 1985.**

National Research Council, Canada. Associate Committee on the National Building Code, NRCC No.23178, Ottawa, National Research Council of Canada, 1985, 278p., Second edition. Refs. passim. Includes commentaries, p.143-278.

**Cold weather construction, Building codes, Snow loads, Permafrost beneath structures, Design, Roofs, Fires, Climatic factors, Safety, Construction materials, Canada.**

40-759

**Effects of the variations of falling velocities of snowflakes on their aggregation.**

Sasyo, Y., et al, *Meteorological Society of Japan. Journal*, Apr. 1985, 63(2), p.249-261. With Japanese summary. 10 refs.

Matsuo, T.

**Snowflakes, Snowfall, Ice crystal adhesion, Velocity, Agglomeration.**

40-760

**Role of liquid water on an ice surface during rime electrification—basic experiment in thunderstorm electrification.**

Takahashi, T., *Meteorological Society of Japan. Journal*, Apr. 1985, 63(2), p.262-266. With Japanese summary. 15 refs.

**Ice surface, Cloud electrification, Water content, Ice water interface, Hoarfrost, Supercooled clouds, Ice crystals, Air temperature.**

40-761

**Atmospheric cooling around the melting layer in continuous rain.**

Matsuo, T., et al, *Meteorological Society of Japan. Journal*, Apr. 1985, 63(2), p.340-346, 8 refs.

**Sakakibara, H., Aoyagi, J., Matsuura, K.**

**Snowmelt, Cooling, Snowflakes, Heat transfer, Rain, Air temperature.**

40-762

**Types of debris slope accumulations and rock glaciers in South Spitsbergen.**

Lindner, L., et al, *Boreas*, 1985, 14(2), p.139-153, 35 refs.

Marks, L.

**Rock glaciers, Talus, Moraines, Landforms, Glacier melting, Slopes, Mountains, Norway—Spitsbergen.**

40-763

**Inventory of deformational structures as a tool for unravelling the Quaternary geology of glaciated areas.**

Brodzikowski, K., et al, *Boreas*, 1985, 14(2), p.175-188, 30 refs.

Van Loon, A.J.

**Glacial deposits, Quaternary deposits, Geology, Geomorphology, Sediments, Glaciation, Deformation.**

40-764

**Periglacial landforms and processes in the southern Kenai Mountains, Alaska.**

Bailey, P.K., *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1985, SR 85-03, 60p., ADA-157 459, Refs. p.54-60.

**Periglacial processes, Landforms, Permafrost distribution, Geomorphology, Patterned ground, Nunataks, Altiplanation, Nivation, Soil temperature, United States—Alaska—Kenai Mountains.**

The distribution and characteristics of periglacial landforms in the southern Kenai Mountains, Alaska, were investigated during 1979 and 1980. The principal area of study was a 1300-m-high mountain mass that stood as a nunatak during the last general glaciation. Periglacial features in the area include gelifluction lobes, nivation hollows, cryoplanation terraces, tors, a string bog, and such patterned ground as sorted circles, sorted polygons, earth hummocks, sorted steps, sorted stripes, and small ice-wedge polygons.

40-765

**Report on pit-wall observations of snow cover in Sapporo, 1983-84.**

Endo, Y., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1984, No.43, p.1-9, 3 refs., In Japanese.

Akitaya, E.

**Snow accumulation, Snow depth, Snow cover, Statistical analysis, Japan—Sapporo.**

40-766

**Snow cover observations at Avalanche Research Station, Toikanbetsu, Northern Hokkaido, XVI (1983-1984 winter).**

Huzioka, T., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1984, No.43, p.11-25, 15 refs., In Japanese.

**Snow cover stability, Snow depth, Avalanche formation, Temperature distribution, Statistical analysis.**

40-767

**Strain rate and stresses of snow on a mountain slope, Toikanbetsu, Northern Hokkaido VI (1983-1984 winter).**

Shimizu, H., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1984, No.43, p.25-39, 11 refs., In Japanese.

**Snow cover stability, Snow strength, Strains, Stresses, Mountains, Slope orientation.**

40-768

**Evaporation rate of a snow cover observed in Sapporo during the winters from 1970-1983.**

Kojima, K., *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1984, No.43, p.41-49, 5 refs., In Japanese.

**Snow evaporation, Snow temperature, Air temperature, Statistical analysis, Time factor, Winter, Japan—Sapporo.**

40-769

**Radiation measurements of snowy season in 1983-1984 at Sapporo.**

Ishikawa, N., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1984, No.43, p.51-58, 8 refs., In Japanese.

**Kojima, K., Motoyama, H., Yamada, Y.**

**Snow optics, Solar radiation, Albedo, Temperature variations.**

40-770

**Measurements of radiation and meteorological elements during the snowmelt season in 1981-84 (Moshiri Basin).**

Motoyama, H., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1984, No.43, p.59-68, 4 refs., In Japanese.

**Ishikawa, N., Kojima, K., Kobayashi, D.**

**Snow optics, Snowmelt, Solar radiation, Meteorological factors, Seasonal variations.**

40-771

**Distribution of pack ice off Okhotsk Sea coast of Hokkaido observed with sea ice radar network, January-April, 1984.**

Aota, M., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1984, No.43, p.69-96, In Japanese.

**Radar photography, Sea ice distribution, Pack ice, Mapping, Remote sensing, Okhotsk Sea.**

40-772

**Moisture and humidity, 1985, measurement and control in science and industry.**

International Symposium on Moisture and Humidity, Washington, D.C., Apr. 15-18, 1985, Research Triangle Park, NC, Instrument Society of America, 1985, 1028p., Refs. passim. For selected papers see 40-773 through 40-779.

**Humidity, Moisture transfer, Supercooling, Thermodynamics, Ice cover effect, Hygrometers, Freezing points, Dew point, Meetings, Temperature effects.**

40-773

**Comparison of some thermodynamic properties of H<sub>2</sub>O from 273.15 to 473.15K as formulated in the 1983 ASHRAE tables and the 1983 NBS/NRC steam tables.**

Hyland, R.W., International Symposium on Moisture and Humidity, Washington, D.C., Apr. 15-18, 1985, Proceedings. Moisture and humidity, 1985, Research Triangle Park, NC, Instrument Society of America, 1985, p.29-35, 13 refs.

**Thermodynamics, Water vapor, Vapor pressure, Water pressure, Saturation, Liquid phases, Enthalpy, Temperature effects.**

40-774

**Accurate psychrometer coefficients for wet and ice-covered cylinders in laminar transverse airstreams.**

Wylie, R.G., et al, International Symposium on Moisture and Humidity, Washington, D.C., Apr. 15-18, 1985, Proceedings. Moisture and humidity, 1985, Research Triangle Park, NC, Instrument Society of America, 1985, p.37-56, 19 refs.

Lalas, T.

**Ice cover effect, Psychrometers, Humidity, Moisture, Air flow, Accuracy.**

40-775

**Measurements of water vapor in the stratosphere with a frost-point hygrometer.**

Oltmans, S.J., International Symposium on Moisture and Humidity, Washington, D.C., Apr. 15-18, 1985, Proceedings. Moisture and humidity, 1985, Research Triangle Park, NC, Instrument Society of America, 1985, p.251-258, 7 refs.

**Water vapor, Hygrometers, Vapor pressure, Humidity, Freezing points, Dew point.**

40-776

**Experimental validation of a mathematical model for predicting moisture transfer in attics.**

Burch, D., International Symposium on Moisture and Humidity, Washington, D.C., Apr. 15-18, 1985, Proceedings. Moisture and humidity, 1985, Research Triangle Park, NC, Instrument Society of America, 1985, p.287-296, 15 refs.

**Moisture transfer, Water vapor, Roofs, Hoarfrost, Ice melting, Climatic factors, Mathematical models.**

40-777

**Calibration system for producing low frost points.**

Hammond, R.H., et al, International Symposium on Moisture and Humidity, Washington, D.C., Apr. 15-18, 1985, Proceedings. Moisture and humidity, 1985, Research Triangle Park, NC, Instrument Society of America, 1985, p.389-393, 2 refs.

Chleck, D.

**Freezing points, Gases, Hygrometers, Flow measurement, Moisture.**

40-778

**Transfer humidity standard for dew point temperatures in the range from -20 C and +60 C.**

Merigoux, J., et al, International Symposium on Moisture and Humidity, Washington, D.C., Apr. 15-18, 1985, Proceedings. Moisture and humidity, 1985, Research Triangle Park, NC, Instrument Society of America, 1985, p.401-410, 3 refs.

Cretunon, B.

**Humidity, Moisture transfer, Dew point, Hygrometers, Heat loss, Temperature effects, Analysis (mathematics).**

40-779

**Saltation of snow.**

Smathers, L.B., et al, International Symposium on Moisture and Humidity, Washington, D.C., Apr. 15-18, 1985, Proceedings. Moisture and humidity, 1985, Research Triangle Park, NC, Instrument Society of America, 1985, p.631-641, 32 refs.

Pell, K.M.

**Blowing snow, Snow mechanics, Snow creep, Shear stress, Snow surface, Analysis (mathematics), Particles, Wind factors.**

40-780

**Some observations of the sea-ice in the southwest Indian Ocean.**

Streten, N.A., et al, *Australian meteorological magazine*, Dec. 1984, 32(4), p.195-206, 8 refs.  
Pike, D.J.

**Ice cover, Sea ice distribution, Polynyas, Air temperature, Wind velocity, Antarctica—Prydz Bay.**

The results are presented of shipboard observations of the extent, concentration, and thickness of sea-ice and the concurrent meteorological conditions in the Prydz Bay region in the early summer of 1982-83. Comparisons are made with aerial sea-ice observations and with broadscale analyses of ice concentrations based on satellite data and locally read-out imagery. These indicate that satellite-analyzed concentrations are probably generally greater than actually exist, particularly in conditions of extensive ice cover. The regional pattern of shore polynya formation is mapped, and appears to be related to surface ocean circulation, coastal configuration, the existence of offshore banks on which icebergs are frequently grounded to form a nucleus for subsequent long-lived and stable sea-ice formation, and on prevailing coastal easterly winds. (Auth.)

40-781

**Periglacial investigations on King George Island, South Shetland Islands, Antarctica. German physiographic research in the Antarctic. Report on the 1983/84 season.** (Untersuchungen zum Periglazial auf der König-Georg-Insel Südschettlandinseln Antarktika. Deutsche physiographische Forschungen in der Antarktis, Bericht über die Kampagne 1983/84).

Barsch, D., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Nov. 1985, No.24, 63p., In German with English summary. 32 figs., 10 tables. Refs. p.60-63.  
Blümel, W.-D., Flügel, W.-A., Mäusbacher, R., Stäblein, G., Zick, W.

**Geologic structures, Geocryology, Permafrost, Hydrology, Glacial geology, Antarctica—King George Island.**

The physiographic project is a contribution to German antarctic research within the priority program of the German Research Foundation (DFG, Bonn). The project is aimed at periglacial processes of cryodynamic and geomorphic evolution, which causes the mesoscale formation of slopes, valleys and coasts in the ice-free areas of King George Island. The intercorrelation of climate, water, permafrost and relief as a zonal periglacial geosystem is studied in its regional as well as in its general context. Specific investigations encompass interpretation of relief forms, hydrological measurements, profile and soil temperature analysis in permafrost layers, valley systems with permafrost, slope movements and denudation, shorelines and cryoabrasion. Results of nine field studies and evaluations are listed. (Auth.)

40-782

**Antarctic glacial marine sedimentation: a core workshop.**

Anderson, J.B., Houston, Texas, Rice University, 1985, 66 leaves, Refs. p.61-66.  
**Sediments, Marine deposits, Glacial deposits, Glacier ice, Marine geology, Ice shelves, Models.**

A considerable volume of literature exists on glacial marine sedimentation especially on ancient glacial marine deposits. These deposits are widespread, both in time and space, and are of considerable paleogeographic significance. Still, the modern ice-covered seas are among the most poorly understood modern sedimentary environments, due mainly to inaccessibility. This is particularly true of the Antarctic continental shelf. Understanding of oceanographic and glacial processes has also expanded greatly in recent years, and this information, when coupled with geologic and geophysical results, is providing a much better understanding of antarctic marine sedimentary processes. The core workshop was intended to summarize this information and to provide its participants with the opportunity to examine sediment cores and geophysical data from the antarctic sea floor. Specific topics discussed in this review include: sedimentary environments and processes on the marine ice sheet, ice shelf, outlet glaciers and glacier tongues, ice cliffs, bays and fjords, piedmont glaciers, and ice free coasts; glacial tills and glacial marine deposits; modern shelf sediments; sedimentation model; and deep sea sedimentation. (Auth.)

40-783

**Soil-water potential and unfrozen water content and temperature.**

Xu, X., et al, *Journal of glaciology and geocryology*, 1985, 7(1), MP 1932, p.1-14, 8 refs., In Chinese with English summary.  
Oliphant, J.L., Tice, A.R.

**Frozen ground temperature, Nuclear magnetic resonance, Unfrozen water content, Soil water, Soil structure, Water content, Freezing points, Soil chemistry, Soil temperature, Density (mass/volume).**

Soil-water potential was determined by the extraction method and four factors affecting the soil-water potential, including water content, soil type, dry density and temperature, were investigated. The unfrozen water content of frozen soils was determined by the pulsed nuclear magnetic resonance technique and three factors affecting the unfrozen water content, including initial water content, dry density and salt concentration, were investigated. Results have shown that the soil-water

potential in the unsaturated, unfrozen soils decreases both with the decrease in the water content and with the increase in the dispersion of the soil and increases with the increases in the dry density and temperature. The unfrozen water content of frozen soils changes slightly with the initial water content and the dry density within the range of 3% for the morin clay and increases sharply with the increase in the salt concentration.

40-784

**On permafrost evolution in the Qinghai River region of the Qinghai-Xizang Plateau since the Late Pleistocene.**

Wang, S., et al, *Journal of glaciology and geocryology*, 1985, 7(1), p.15-26, 9 refs., In Chinese with English summary.  
Zhang, W.

**Permafrost distribution, Climatic changes, Periglacial processes, Paleoclimatology, Pleistocene, China—Qinghai-Xizang Plateau.**

40-785

**Flow characteristics of Glacier No.1 at the Headwater of Urumqi River, Tianshan.**

Sun, Z., et al, *Journal of glaciology and geocryology*, 1985, 7(1), p.27-40, 7 refs., In Chinese with English summary.

Chen, Y., You, G., Han, J.  
**Glacier flow, Ice mechanics, Glacier ablation, Slope orientation, Mountain glaciers, Velocity, China—Tian Shan.**

40-786

**Preliminary study on strain-rate on surface of Glacier No.1 at the Headwater of Urumqi River, Tianshan.**

Han, J., et al, *Journal of glaciology and geocryology*, 1985, 7(1), p.41-49, 7 refs., In Chinese with English summary.

Chen, X., Sun, Z.  
**Glacier flow, Strains, Crevasses, Glacier thickness, Ice mechanics, Glacier beds, Glacier surfaces, Distribution, Shear strain, Topographic features.**

40-787

**Periglacial phenomena in Altai Mountains of China.**

Li, S., et al, *Journal of glaciology and geocryology*, 1985, 7(1), p.51-56, In Chinese with English summary.  
Tong, B., Zhang, T.

**Periglacial processes, Permafrost distribution, Geomorphology, Permafrost weathering, Altitude, Altiplanation, China—Altai Mountains.**

40-788

**Influence of snow cover on the lower limit of permafrost in Altai Mountains.**

Zhang, T., et al, *Journal of glaciology and geocryology*, 1985, 7(1), p.57-63, 7 refs., In Chinese with English summary.

Tong, B., Li, S.  
**Permafrost distribution, Snow cover effect, Permafrost depth, Active layer, Permafrost thermal properties, Air temperature, Seasonal variations, China—Altai Mountains.**

40-789

**Appraisalment on the groundwater resources in permafrost areas in the middle-east section of Mt. Qilian.**

Cao, J., *Journal of glaciology and geocryology*, 1985, 7(1), p.65-76, In Chinese with English summary.  
**Permafrost hydrology, Soil water, Runoff, Water reserves, Seasonal variations, China—Qilian Mountain.**

40-790

**Determination of lower table of permafrost in Wudao-liang, along the Qinghai-Xizang Highway.**

Jiang, Z., *Journal of glaciology and geocryology*, 1985, 7(1), p.77-81, In Chinese with English summary.  
**Permafrost depth, Ground ice, Permafrost thermal properties, Soil water, Boreholes, China—Qinghai-Xizang Plateau.**

40-791

**Roadbed stability in permafrost region.**

Yang, H., *Journal of glaciology and geocryology*, 1985, 7(1), p.83-88, 5 refs., In Chinese.  
**Permafrost beneath roads, Roadbeds, Stability, Frozen ground strength.**

40-792

**Trend of the study on glacial depositional facies in the Qaidam.**

Feng, Z., et al, *Journal of glaciology and geocryology*, 1985, 7(1), p.89-97, 28 refs., In Chinese.  
Gao, D.

**Glacial deposits, Landscape development, Topographic features, Moraines, Geomorphology.**

40-793

**Exploration of the glaciers in the Hengduan Mountains.**

Song, M., *Journal of glaciology and geocryology*, 1985, 7(1), p.98 + 4 plates, In Chinese with English summary.

**Glacier surveys, Glacier flow, Mountain glaciers, China—Hengduan Mountains.**

40-794

**Proceedings.**

International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984, Aspen, CO, ISSW Workshop Committee, (1984), 218p., Refs. passim. For individual papers see 40-795 through 40-829.

**Avalanche formation, Avalanche engineering, Avalanche forecasting, Snow accumulation, Avalanche mechanics, Skis, Slope orientation, Meetings, Detection, Safety, Snow cover stability, Topographic features.**

40-795

**Avalanche frequency and magnitude determination for ski touring operations.**

Dexter, L., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.1-7, 23 refs.

Armstrong, B.R.  
**Avalanche formation, Avalanche forecasting, Safety, Skis, Weather observations, Statistical analysis, Trees (plants), Age determination.**

40-796

**Avalanche information systems in Kananaskis Country, Alberta, Canada.**

More, G., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.8-11, 10 refs.

Niemann, O., Langford, G.  
**Avalanche forecasting, Avalanche formation, Avalanche tracks, Computer applications, Models, Mapping, Skis.**

40-797

**Effect of simple terrain parameters on avalanche frequency.**

Judson, A., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.12-23, 8 refs.

King, R.M.  
**Avalanche formation, Topographic features, Avalanche tracks, Safety, Mountains, Models, Slope orientation, Roads.**

40-798

**Avalanche frequency on a slope with and without defense structures.**

Rychetnik, J., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.24-29, 6 refs.

**Avalanche formation, Avalanche engineering, Protection, Snow fences, Countermeasures, Slope orientation, Fences, Tests, Statistical analysis.**

40-799

**New developments for control of snow avalanches in the Western European Alps.**

Montagne, C., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.30-35, 2 refs.

Montagne, J., Rayne, T., Satterlee, A.  
**Snow fences, Avalanche formation, Avalanche engineering, Slope stability, Revegetation, Forestry, Snow stabilization, Forest lines, Countermeasures, Supports, Protection.**

40-800

**Diagnosis of precipitation in mountainous terrain.**

Hayes, P.S., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.36-41, 7 refs.

**Precipitation (meteorology), Avalanche forecasting, Weather forecasting, Mountains, Winter, Wind direction, Topographic effects, Synoptic meteorology.**

- 40-801**  
**Preferential detection of sound by persons buried under snow avalanche debris as compared to persons on the overlying surface.**  
 Johnson, J.B., MP 1920, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.42-47, 8 refs.  
**Rescue operations, Avalanche deposits, Detection, Snow acoustics, Snow cover effect, Sound waves, Attenuation.**  
 The preferential detection of sound by a person buried under snow can be explained by the strong attenuation of acoustic waves in snow and the relatively higher level of background acoustic noise that exists for persons above the snow surface as compared to an avalanche burial victim. This noise masks sound transmitted to persons on the snow surface causing a reduction of hearing sensitivity as compared to the burial victim. Additionally, the listening concentration of a buried individual is generally greater than for persons working on the snow surface, increasing their subjective awareness of sound.
- 40-802**  
**Avalanche beacons—working principles, specifications and comparative properties.**  
 Lind, D.A., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.48-53, 5 refs.  
 Smythe, W.R.  
**Avalanche forecasting, Avalanche formation, Radio beacons, Snow cover effect, Radio waves, Transmission, Electromagnetic prospecting.**
- 40-803**  
**Frequenzsalat—toward uniform frequencies for various types of avalanche victim locators.**  
 Faisant, R.D., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.54-57.  
**Avalanche deposits, Rescue equipment, Electronic equipment, Detectors, Rescue operations, Radio waves.**
- 40-804**  
**Snow creep as a model for postcontrol releases.**  
 Pratt, T., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.58-66, 1 ref.  
**Snow creep, Explosion effects, Snow cover stability, Strains, Avalanche triggering, Avalanche formation, Rheology, Avalanche modeling.**
- 40-805**  
**Practical experience with aerial detonation of explosives for avalanche control.**  
 Juergens, J., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.67-69, 2 refs.  
**Avalanche triggering, Explosives, Detonation waves, Equipment, Snow depth.**
- 40-806**  
**French experience in avalanche education for skiers.**  
 Valla, F., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.70-77, 8 refs.  
**Avalanche formation, Accidents, Skis, Statistical analysis, Mountains.**
- 40-807**  
**Measurements of the amount of snow brought down by avalanches.**  
 Schaefer, P.A., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.78-79, 1 ref.  
**Avalanche deposits, Snow depth, Avalanche tracks, Snowfall.**
- 40-808**  
**Climate effects on snow avalanche travel distances.**  
 Mears, A.L., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.80-83, 8 refs.  
**Avalanche deposits, Avalanche tracks, Climatic effects, Snow cover stability, Protective vegetation, Mountains, Statistical analysis.**
- 40-809**  
**Institutional arrangements for snow avalanche management in Canada.**  
 McFarlane, R.C., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.84-89, 9 refs.  
**Avalanches, Organizations, Legislation, Canada.**
- 40-810**  
**Factors comprising county/municipal land-use controls addressing snow avalanches.**  
 Niemczyk, K., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.90-94, 2 refs.  
**Avalanches, Safety, Legislation, Standards, Accidents, Countermeasures.**
- 40-811**  
**Statistical avalanche zoning.**  
 McClung, D.M., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.95-98, 2 refs.  
 Lied, K.  
**Avalanche formation, Avalanche tracks, Topographic features, Statistical analysis, Avalanche mechanics, Mountains.**
- 40-812**  
**Avalanche litigation: technology and liability.**  
 Kennedy, J.L., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.99-101, 1 ref.  
**Avalanches, Legislation, Accidents, Protection, Damage, Cost analysis.**
- 40-813**  
**Wet slab instability.**  
 Kattelmann, R., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.102-108, 45 refs.  
**Avalanche formation, Wet snow, Shear strength, Snow cover stability, Snow water content, Snow slides, Avalanche forecasting, Drainage, Water retention.**
- 40-814**  
**Avalanche forecast: experience using nearest neighbours.**  
 Buser, O., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.109-115, 12 refs.  
 Good, W.  
**Avalanche forecasting, Avalanche formation, Statistical analysis, Models.**
- 40-815**  
**Engineer and practitioner: a combined effort in avalanche hazard forecasting.**  
 Harrison, W.L., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.116-123, 6 refs.  
 Wiegele, M.  
**Avalanche forecasting, Snow cover stability, Avalanche engineering, Weather forecasting, Computer applications, Slope orientation, Snow depth, Snow density, Shear strength, Temperature gradients, Tensile properties.**
- 40-816**  
**Strength comparisons between avalanche and non-avalanche snowpacks.**  
 Ferguson, S.A., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.124-128, 24 refs.  
**Avalanche mechanics, Snow strength, Snow cover stability, Stresses, Fracturing, Snow cover structure, Tensile properties.**
- 40-817**  
**Periodic patterns in snow stability: update October 1984.**  
 Lev, P., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.129-132, 2 refs.  
**Snow cover stability, Avalanche formation, Avalanche forecasting, Statistical analysis, Theories, Tides, Temperature gradients, Lunar phases.**
- 40-818**  
**Avalanche hazard and the solunar cycle.**  
 Sommerfeld, R.A., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.133-136, 7 refs.  
 Bowles, J.R.  
**Avalanche formation, Snow cover stability, Slope stability, Accidents, Diurnal variations, Solar activity, Lunar phases.**
- 40-819**  
**Remote instrumentation for avalanche warning systems and snow cover monitoring.**  
 Gubler, H., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.137-140.  
**Avalanche forecasting, Remote sensing, Warning systems, Snow depth, Snow water equivalent, Snow stratigraphy, Measuring instruments.**
- 40-820**  
**Weather and snow observations for avalanche forecasting: an evaluation of errors in measurement and interpretation.**  
 Marriott, R.T., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.145-154, 11 refs.  
 Moore, M.B.  
**Avalanche forecasting, Snow accumulation, Snow water equivalent, Snow cover stability, Precipitation gauges, Weather observations, Accuracy, Wind factors, Temperature measurement.**
- 40-821**  
**Snowpack patterns in the alpine tundra Niwot Ridge, Front Range, Colorado.**  
 Halpenny, J.C., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.155-160.  
 Pollak, O.D., Heffernan, M.  
**Avalanche forecasting, Snow cover stability, Alpine tundra, Topographic features, Snow depth, Monitors, Snow melting, Vegetation, Wind factors, Snow mechanics, Snow accumulation, United States—Colorado—Niwot Ridge.**
- 40-822**  
**Avalanche detection through seismic technique.**  
 Lafaille, J., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.161-166, 3 refs.  
 Danielou, Y.  
**Avalanche formation, Avalanche forecasting, Avalanche mechanics, Detection, Seismic surveys, Monitors.**
- 40-823**  
**Use of time lapse photography to monitor avalanche activity and snow behavior.**  
 McPherson, H.J., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.167-171, 17 refs.  
 De Scally, F., Gardner, J.S.  
**Avalanche formation, Avalanche tracks, Photographic reconnaissance, Snow cover stability, Slope stability, Monitors.**
- 40-824**  
**Helicopter skiing—operations and agency administration.**  
 Wingle, H.P., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.172-178.  
**Avalanche forecasting, Helicopters, Skis, Protection, Legislation, Safety.**
- 40-825**  
**New classification system for the seasonal snow cover.**  
 Colbeck, S.C., MP 1921, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, [1984], p.179-181, 3 refs.  
**Snow crystal structure, Metamorphism (snow), Snow water content, Freeze thaw cycles, Classifications, Ice crystal growth, Snow melting, Snow cover, Grain size.**  
 It is necessary to assign terms to snow crystals so that we can refer to them at any time. TCS (1954) suggested five classes of snow crystals but many important types of crystals were not included. Sommerfeld (1969) and then Sommerfeld and LaChapelle (1970) suggested a classification based on processes because, if the processes could be correctly identified, information would be provided about both crystal shapes and metamorphic processes. Unfortunately, many of the names used—equitemperature, temperature gradient, and melt-freeze—can misrepresent the processes responsible for generating those shapes. Other terms are suggested here in hopes of correctly describing snow crystals. Only the major categories are dealt with here; a more detailed classification will be published later.

- 40-826**  
Observations of snow structure.  
Perla, R., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.182-187, 17 refs.  
Dozier, J.  
Snow crystal structure, Ice crystal structure, Unfrozen water content, Air entrainment, Solid phases, Liquid phases, Gas inclusions, Equipment, Stereophotography.
- 40-827**  
Observations on the growth process and strength characteristics of surface hoar.  
Lang, R.L., et al, International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.188-195, 11 refs.  
Leo, B.R., Brown, R.L.  
Hoarfrost, Snow surface, Ice crystal structure, Snow crystal structure, Heat loss, Temperature gradients, Shear strength, Mechanical tests, Cloud cover.
- 40-828**  
Snow redistribution from fetch to starting zone.  
Hartman, H., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.196-197.  
Snow cover distribution, Avalanche formation, Topographic features, Precipitation (meteorology), Mountains, Wind velocity, Snow water equivalent, Meteorological factors.
- 40-829**  
Goat Lick Bridge avalanches of 1979 and 1982.  
Martinelli, M., Jr., International Snow Science Workshop, Aspen, CO, Oct. 24-27, 1984. Proceedings, Aspen, CO, ISSW Workshop Committee, (1984), p.198-207, 5 refs.  
Avalanche deposits, Bridges, Roads, Velocity, Damage, Avalanche tracks, Mountains, Aerial surveys, Countermeasures, Wet snow, United States—Montana—Glacier National Park.
- 40-830**  
Effects of soluble salts on the unfrozen water contents of the Lanzhou, PRC, silt.  
Tice, A.R., et al, *Journal of glaciology and geocryology*, June 1985, 7(2), MP 1933, p.99-109, In Chinese with English summary., 20 refs. For English version see 39-2916.  
Zhu, Y., Oliphant, J.L.  
Unfrozen water content, Frozen ground physics, Saline soils, Electrical resistivity, Soil chemistry.  
Phase composition curves are presented for a typical saline silt from Lanzhou and compared to some silts from Alaska. The unfrozen water content of the Chinese silt is much higher than the Alaskan silts. This higher amount is due to the large amount of soluble salts present in the silts from China which are not present in the silts from interior Alaska. When the salts are removed, the unfrozen water contents are then similar for the Chinese and Alaskan silts. We have introduced a technique for correcting the unfrozen water content of partially frozen soils due to high salt concentrations. This correction is possible by calculating the modality of the unfrozen water at each temperature from a measurement of the electrical conductivity of the extract of a saturated paste.
- 40-831**  
Water migration in unsaturated frozen morin clay under linear temperature gradients.  
Xu, X., et al, *Journal of glaciology and geocryology*, June 1985, 7(2), MP 1934, p.111-122, 14 refs., In Chinese with English summary.  
Oliphant, J.L., Tice, A.R.  
Soil water migration, Clay soils, Frozen ground physics, Saturation, Temperature gradients.
- 40-832**  
Observation and experiment on inner flow characteristics of Glacier No. 1 and in the Urumqi River headwaters, Tianshan.  
Wang, Z., et al, *Journal of glaciology and geocryology*, June 1985, 7(2), p.123-132, 3 refs., In Chinese with English summary.  
Song, G., Li, G.  
Glacier flow, Ice creep, Ice temperature, Shear stress, Basal sliding, Glacier thickness, Markers, Temperature distribution, Strains.
- 40-833**  
Preliminary analysis on the climatic changes in the drainage area of Urumqi River from tree ring.  
Kang, X., *Journal of glaciology and geocryology*, June 1985, 7(2), p.133-140, 7 refs., In Chinese with English summary.  
Climatic changes, Periodic variations, Age determination, Drainage, China—Urumqi River.
- 40-834**  
Study of ice temperature in No. 1 Glacier in the Urumqi River headwaters, Tianshan.  
Ren, J., et al, *Journal of glaciology and geocryology*, June 1985, 7(2), p.141-152, 23 refs., In Chinese with English summary.  
Zhang, J., Huang, M.  
Glacier ice, Ice temperature, Heat transfer, Glacier melting, Boreholes, Active layer, Temperature variations, Soil temperature, Glacier ablation, Basal sliding, China—Tian Shan.
- 40-835**  
Radar measuring ice thickness of No. 1 Glacier at the source of Urumqi River, Tianshan.  
Zhang, X., et al, *Journal of glaciology and geocryology*, June 1985, 7(2), p.153-162, 12 refs., In Chinese with English summary.  
Glacier thickness, Radar echoes, Glacier beds, Topographic features, China—Urumqi River.
- 40-836**  
Characteristics of runoff in the Glacier No. 1 region at headwater of Urumqi River, Tianshan.  
Li, N., *Journal of glaciology and geocryology*, June 1985, 7(2), p.163-170, 3 refs., In Chinese with English summary.  
Glacial hydrology, Runoff, Ice melting, Snowmelt, Meltwater, Temperature variations, Seasonal variations, Glacier ablation, China—Tian Shan.
- 40-837**  
Application of neutron moisture gauge to the scientific research and engineering in permafrost region.  
Yang, H., *Journal of glaciology and geocryology*, June 1985, 7(2), p.171-180, 3 refs., In Chinese with English summary.  
Permafrost beneath roads, Frozen ground physics, Permafrost hydrology, Soil water migration, Active layer, Permafrost depth, Water content, Thaw depth, Seasonal variations, Roadbeds, Ground thawing.
- 40-838**  
Damage and prevention of pingos formed by water pressure in Yitulihe District.  
Jia, M., *Journal of glaciology and geocryology*, June 1985, 7(2), p.181-184, In Chinese.  
Pingos, Water pressure, Soil water, Damage, Countermeasures.
- 40-839**  
Method for the solution of heat transfer problems with a change of phase.  
Frederick, D., et al, *Journal of heat transfer*, Aug. 1985, 107(3), p.520-526, 15 refs.  
Greif, R.  
Freezing, Heat transfer, Liquid solid interfaces, Phase transformations, Analysis (mathematics).
- 40-840**  
Inclination-induced direct-contact melting in a circular tube.  
Sparrow, E.M., et al, *Journal of heat transfer*, Aug. 1985, 107(3), p.533-540, 9 refs.  
Myrum, T.A.  
Melting, Heat transfer, Liquid solid interfaces, Phase transformations, Latent heat, Analysis (mathematics).
- 40-841**  
Analysis of freeze coating on a nonisothermal moving plate by a perturbation method.  
Cheung, F.B., *Journal of heat transfer*, Aug. 1985, 107(3), p.549-556, 24 refs.  
Ice melting, Freezing points, Water flow, Ice formation, Heat transfer, Plates, Temperature effects, Velocity, Analysis (mathematics), Ice cover thickness.
- 40-842**  
Determination of local heat transfer coefficients at the solid-liquid interface by heat conduction analysis of the solidified region.  
Cheng, K.C., et al, *Journal of heat transfer*, Aug. 1985, 107(3), p.703-706, 6 refs.  
Sabbapathy, P.  
Ice formation, Ice water interface, Heat transfer, Freeze thaw cycles, Thermal conductivity, Liquid solid interfaces, Water pipes, Plates, Water flow, Analysis (mathematics).
- 40-843**  
Tailor-made technology for each area as N. American Arctic's energy flows.  
Jahns, H.O., *Offshore resources*, Spring 1985, 3(1), p.8-12.  
Ice navigation, Offshore structures, Offshore drilling, Ice islands, Marine transportation, Ships.
- 40-844**  
Enhanced marine radar being used to extend Arctic shipping season. *Offshore resources*, Spring 1985, 3(1), p.20-24.  
Ice navigation, Airborne radar, Air cushion vehicles, Remote sensing, Marine transportation.
- 40-845**  
Far-infrared spectrum of ice VIII.  
Tay, S.P., et al, *Journal of chemical physics*, Sep. 15, 1985, 83(6), p.2708-2711, 20 refs.  
Klug, D.D., Whalley, E.  
High pressure ice, Infrared spectroscopy, Phase transformations, Vibration.
- 40-846**  
Comment on the consistency of truncated nonlinear integral equation based theories of freezing.  
Cerjan, C., et al, *Journal of chemical physics*, Sep. 1, 1985, 83(5), p.2376-2383, 23 refs.  
Bagchi, B., Rice, S.A.  
Freezing, Thermodynamics, Density (mass/volume), Theories, Analysis (mathematics).
- 40-847**  
Soviet glaciological investigations in 1983. (Sovetsk-  
ie glatsiologicheskie issledovaniia v 1983 godu).  
Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.3-9, In Russian.  
Shliakhova, O.M.  
Mountain glaciers, Photographic reconnaissance, Snow physics, Ice physics, Avalanches, Ice coring drills, Avalanche engineering, Permafrost structure, Ice volume, Aerial surveys, Mapping.  
Soviet glaciological studies were conducted in the Caucasus, Central Asia, Siberia and Antarctica. The sled-caterpillar vehicle expedition from Mirny Station to Dome B was organized by the U.S.S.R. Arctic and Antarctic Scientific Research Institute, the purpose being radar measurements of ice flow rates, which showed 0.2 m per year near the ice-spread crater. Drilling of a new deep well began at the Vostok Station so far reaching 240 m. Geophysical studies continued in a well 2083 m deep and included ice structure to 1415 m, ice crystal forms and air inclusions. Ice shores, in the Molodzhnaya Station area, were searched for possible mooring places and a new site for an airport for heavier planes. Drill cores from Komsomolskaya Station and Ross glacier were analyzed jointly with American scientists at New York State University, Buffalo, N.Y. Continuing research studies included bottom melting of the Antarctic ice sheet, iceberg melting during transportation, ice budget of the East Antarctic ice-accumulation basin and the cryogenic processes at glacier bases.
- 40-848**  
Completion of the Glacier Inventory of the USSR. (Zavershenie rabot po sozdaniu kataloga lednikov SSSR).  
Vinogradov, O.N., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.10-16, In Russian with English summary.  
Manuals, Glacier surveys.
- 40-849**  
Electromagnetic signals of avalanche descent. (Elektromagnitnye predvestniki skhoda snezhnykh lavin).  
Berri, B.L., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.38, In Russian. 4 refs.  
Psalmshchikov, V.F.  
Avalanches, Avalanche triggering, Monitors, Snow physics, Electromagnetic properties, Slope processes, Measuring instruments.
- 40-850**  
Scheme for matrix classification of natural ice. (Skhema matritchnoi klassifikatsii prirodnikh l'dov).  
Koreisha, M.M., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.39-44, In Russian with English summary. 10 refs.  
Classifications, Land ice, Sea ice, Ice formation, Ice mechanics, Transformations, Ice structure.
- 40-851**  
Morphogenetic classification of seasonally frozen rocks. (Morfogeneticheskaia klassifikatsiia sezonno-merzlykh gornykh porod).  
Vturna, E.A., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.44-49, In Russian with English summary. 6 refs.  
Active layer, Seasonal freeze thaw, Frozen rocks, Classifications, Cryogenic structures, Cryogenic textures.

40-852

Thickness, subglacial topography and volume of Spitsbergen glaciers from radio echo sounding data. [Tolshchina, podlednyi rel'ef i ob'em lednikov Shpitsbergena po dannym radiozondirovaniia]. Macheret, I.U.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.49-63, In Russian with English summary. 36 refs.  
Zhuravlev, A.B., Bobrova, L.I.  
Radio echo soundings, Mountain glaciers, Subglacial observations, Topography, Glacier thickness, Glacier ice, Ice volume.

40-853

Mechanisms of water channel formation in ice. [Mekhanizmy formirovaniia rusel vodotokov vo l'du]. Khodakov, V.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.63-68, In Russian with English summary. 9 refs.  
Gokhman, V.V.  
Ice surface, Stream flow, Channels (waterways), Naleds, Subglacial drainage.

40-854

Changes in ablation runoff of Pamir-Alai glaciers during their shrinkage. [Izmenenie stoka s lednikov Pamiro-Alaia pri degradatsii oledeneniia]. Shchetinnikov, A.S., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.68-74, In Russian with English summary. 4 refs.  
Glacier ablation, Runoff, Glacier oscillation, Degradation, Alpine glaciation.

40-855

Surface moraines of mountain glaciers, their formation and structure. [Poverkhnostnye moreny gornyykh lednikov: zakonomernosti stroeniia i formirovaniia]. Serebrianniy, L.R., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.74-80, In Russian with English summary. 17 refs.  
Orlov, A.V.  
Glacial deposits, Moraines, Composition, Mountain glaciers, Structures.

40-856

Spreading and development conditions of rock glaciers in the Tien-Shan highlands. [Osobennosti rasprostraneniia i uslovia razvitiia kamennykh gletcheroev v vysokogor'ie Tian-Shania]. Tarakanov, A.G., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.81-88, In Russian with English summary. 21 refs.  
Rock glaciers, Classifications.

40-857

Main scientific results of compiling the World Atlas of Snow and Ice Resources. [Glavnye nauchnye itogi rabot nad Atlasom snezhno-ledovykh resursov mira]. Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.89-93, In Russian with English summary. 4 refs.  
Dreier, N.N.  
Meetings, Glaciology, Glacier ice, Drilling, Geophysical surveys.

40-858

Climatic significance of global glaciation and its reflection on maps of the World Atlas of Snow and Ice Resources. [Klimaticheskoe znachenie oledeneniia Zemli i ego otrazhenie na kartakh Atlasa snezhno-ledovykh resursov mira]. Chizhov, O.P., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.95-101, In Russian with English summary. 21 refs.  
Maps, Snow cover distribution, Land ice, Sea ice, Seasonal variations, Pleistocene.

40-859

Global distribution of solid precipitation presented in the World Atlas of Snow and Ice Resources. [Tverdye osadki zemnogo shara v Atlasе snezhno-ledovykh resursov mira]. Bogdanova, E.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.101-107, In Russian with English summary. 24 refs.  
Struzer, L.R., Shver, T.S.A.  
Snow cover distribution, Land ice, Sea ice, Mapping, Seasonal variations, Climatic factors.

40-860

Methods of glacioclimatic evaluation of precipitation, snow cover and avalanche distribution. [Metody glatsioklimaticheskoi otsenki raspredeleniia osadkov, snezhnogo pokrova i lavin]. Getker, M.I., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.107-116, In Russian with English summary. 14 refs.  
Kanayev, L.A.  
Precipitation (meteorology), Maps, Snow cover distribution, Avalanches, Mountain glaciers, USSR—Tien Shan.

40-861

Maps of mathematical fields of glacier system characteristics in the World Atlas of Snow and Ice Resources. [Karty polet kharakteristik lednikovyykh sistem v Atlasе snezhno-ledovykh resursov mira]. Zverikova, N.M., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.116-121, In Russian with English summary. 8 refs.  
Maps, Mapping, Glaciology, Analysis (mathematics).  
40-862  
Combined evaluation of snow-hydrological characteristics in mountains of North America. [Kombinirovannaya otsenka snezhno-gidrologicheskikh kharakteristik v gornyykh ralonakh Severnoi Ameriki]. Ananicheva, M.D., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.121-126, In Russian with English summary. 7 refs.  
Ivanovskaia, T.E.  
Snow water equivalent, Water reserves, Snow melting, Runoff, Mountain glaciers, Glacier ice, Glacier ablation.

40-863

Methods of engineering and glaciological analysis of glacial systems. [Puti inzhenerno-glatsiologicheskogo analiza glatsial'noi sistem]. Khodakov, V.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.126-130, In Russian with English summary. 10 refs.  
Osokin, N.I.  
Glaciology, Engineering geology, Models, Systems analysis, Snow, Ice.

40-864

Mathematical model of the development of a glacial system. [Matematicheskaya model' razvitiia lednikovoi sistem]. Glazyrin, G.E., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.130-135, In Russian. 9 refs.  
Glaciology, Mathematical models, Mountain glaciers.

40-865

Glaciological and geobotanical indication technique used in determining precipitation fields in the Pamir highlands. [Opredelenie polia osadkov v vysokogor'ie Pamira metodami glatsiologicheskoi i geobotanicheskoi indikatorov]. Agakhanian, O.E., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.135-141, In Russian with English summary. 30 refs.  
Alpine glaciation, Mountain glaciers, Glacier ice, Glacier ablation, Precipitation (meteorology), Glacier alimentation, Mapping.

40-866

Fields of melting at glaciological key levels (with reference to the Pamir-Alai glacial area). [Polia taniia na kharakternykh glatsiologicheskikh urovniakh (na primere Pamiro-Alaiskoi lednikovoi oblasti)]. Rototaeva, O.V., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.143-151, In Russian with English summary. 17 refs.  
Mountain glaciers, Glacier ablation, Glacier alimentation, Glacier ice, Glacier surfaces, Glacier maps.

40-867

Predicting changes in climate, alpine landscapes and glaciation of the Caucasus for the next decades. [Prognoz izmeneniia klimata, vysokogornyykh landshtaftov i oledeneniia Bol'shogo Kavkaza na blizhaišie desiatletii]. Zalikhanov, M.Ch., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.152-159, In Russian. 17 refs.  
Kolmyts, E.G., Panov, V.D., Dokukin, M.D.  
Glacier ice, Alpine glaciation, Landscape types, Long range forecasting, Climatic changes, Environmental impact.

40-868

Zonality of ice formation under continental climatic conditions. [Zonal'nost' p'dobrazovaniia v kontinental'nykh klimaticheskikh usloviakh]. Koreisha, M.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.159-163, In Russian with English summary. 4 refs.  
Romanovskii, N.N.  
Glacier ice, Glacial hydrology, Land ice, Ice formation, Glacier ablation, Ground ice, Permafrost distribution.

40-869

Developing a system of data gathering, storage and processing for the World Glacier Inventory. [Postroyeniye sistemy sbora, khraneniia i obrabotki dannyykh dlia mezhdunarodnogo kataloga lednikov]. Krenke, A.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.163-167, In Russian with English summary. 6 refs.  
Grakovich, V.F., Kuznetsov, M.P., Tarceva, A.M.  
Glacier ice, Glacier alimentation, Mapping, Charts, Computer applications, Data processing, USSR—Caucasus.

40-870

Problems of drilling deep wells in central parts of Antarctica. [Problema bureniia glubokikh skvazhin v tsentral'nykh ralonakh Antarktidy]. Kudriashov, B.B., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.168-172, In Russian with English summary.  
Chistiakov, V.K., Bobin, N.E.  
Ice drills, Ice coring drills, Thermal drills, Drilling fluids, Glaciers, Ice sheets, Antarctica—Vostok Station.

New equipment and technology for drilling 4000 m boreholes were designed by the Leningrad Mining Institute, for temperatures of upper ice layers reaching -50 and -60°C. Thermodrill TELGA-14M and a mobile drilling rig for "dry" holes were used in central areas of Antarctica to maximum drilling depth of 430 m, producing high-quality cores. For filled boreholes, the electric thermodrills TBZS-152M and TBS-112 VCh were designed. Water was removed by circulating water-repellent liquids, which also permitted to preserve boreholes for more than 2 years when filled. Thermodrill parameters and properties of filling liquids are tabulated. New technology made it possible to drill the 2083.7 m hole at Vostok Station and to plan further drilling down to the glacier bed.

40-871

Basic results of geophysical studies of deep boreholes and ice cores in eastern Antarctica. [Osnovnye rezul'taty geofizicheskikh issledovanih glubokikh skvazhin i ledianogo kerna v Vostochnoi Antarktide]. Vostretsov, R.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.172-178, In Russian. 9 refs.  
Ice cores, Drill core analysis, Boreholes, Geophysical surveys, Ice physics, Acoustic measurements, Dielectric properties.  
Results of combined geophysical studies in wells, drilled to a depth of 2000 m on the Mirny-Vostok-1 relief profile, are discussed and illustrated by graphic presentation of ice-core analysis data.

40-872

Quantitative characteristics of ice structure, down to 1400 m in the Vostok Station area, Antarctica. [Kolichestvennaya kharakteristika struktury l'da do glubiny 1400 m. v ralone stantsii Vostok v Antarktide]. Barkov, N.I., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.178-186, In Russian with English summary. 9 refs.  
Lipenkov, V.I.A.  
Ice structure, Glacier ice, Ice sheets, Ice formation, Ice crystal size, Ice crystal structure, Impurities, Bubbles, Gas inclusions, Paleoclimatology, Antarctica—Vostok Station.

It is shown that structural parameters of glacier ice contain genetic information that can be used in paleoclimatic reconstructions, particularly those with vertical variations in ice cross-sections reflecting climatic changes. Ice structure was studied in core samples down to a depth of 1400 m, obtained in 1980 at the Vostok Station. Forms, quantities and sizes of gas inclusions and ice grains, determining density of ice, form systems of voids differing in form complexity, are related to ice formation conditions and are distinguishable from changes caused by dynamic metamorphism. Measurements and computation results are tabulated and illustrated graphically.

- 40-873**  
Evaluating paleoclimatic conditions of ice cover formation from geothermal measurements in deep wells. (Otsenka paleoklimaticheskikh uslovii formirovaniia lednikovogo pokrova po dannym geotermicheskikh izmerenii v glubokikh skvazhinakh). Putikov, O.F., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.186-191, In Russian with English summary. 4 refs.  
Vostretsov, R.N., Dmitriev, D.N.  
Ice cores, Paleoclimatology, Ice physics, Drill core analysis, Data processing, Ice thermal properties, Analysis (mathematics), Antarctica.  
Paleoclimatic conditions during the formation of the Antarctic ice cover are discussed on the basis of comparison of theoretical ice temperature fields to observational data received from the Vostok Station well, down to 900 m. Results are mathematically described in a differential equation, the simplified formulation and solution of which are presented. It is concluded that the 5 degree centigrade air temperature increase at the ice cover center fifteen thousand years ago was associated with ice accumulation increase by 30-40 percent.
- 40-874**  
Variation of the oxygen-18 isotope and Cl ion in ice cores of Vestfonna, Nordanstlandet. (Variatsii izotopa O-18 i Cl v lednikovom kerne zapadnogo ledianogo polia na o. Severo-Vostochnaia Zemlia). Vaikmae, R.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.192-195, In Russian with English summary. 8 refs.  
Martma, T.A., Punning, I.A.-M.K., Tyugu, K.R.  
Ice cores, Drill core analysis, Isotope analysis, Chemical analysis, Oxygen isotopes, Ion density (concentration).
- 40-875**  
Formation of chemical composition of congelation ice. (Faktory formirovaniia khimicheskogo sostava konzheatsionnykh l'dov). Ivanov, A.V., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.195-201, In Russian with English summary. 28 refs.  
Glaciology, Ice formation, Ice composition, Chemical composition, Mathematical models.
- 40-876**  
Hydrochemistry of glaciers in the Caucasus and possibilities of evaluating chemical and isotope composition of atmospheric precipitation of the past. (Gidrokhimia lednikov Kavkaza i vozmozhnost' otsenki khimicheskogo i izotopnogo sostava atmosferykh supadkov proshlogo). Supatashvili, G.D., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.201-205, In Russian. 10 refs.  
Alpine glaciation, Ice formation, Chemical composition, Isotope analysis.
- 40-877**  
Geochemical peculiarities of ice domes on Arctic islands. (Geokhimicheskie osobennosti lednikovyykh pokrovov arkticheskikh ostrovov). Korzun, A.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.206-215, In Russian with English summary. 7 refs.  
Evseev, A.V.  
Air pollution, Land ice, Ice composition, Alpine landscapes, Chemical composition, Snow cover distribution, Snow composition.
- 40-878**  
Purpose and contents of avalanche maps at different stages of engineering investigations. (Naznachenie i soderzhanie kart lavinnol opasnosti na raznykh etapakh inzhenernykh issledovaniy). Zolotarev, E.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.216-223, In Russian with English summary. 12 refs.  
Dziuba, V.V.  
Avalanche engineering, Maps, Avalanche triggering, Snow cover distribution, Snow accumulation, Investigations.
- 40-879**  
Method of quantitative evaluation of massive ice fracturation. (Metod kolichestvennoi otsenki treshchinovostoi lednykh massivov). Ivanov, A.I., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.224-230, In Russian with English summary. 9 refs.  
Ice cracks, Ice cover strength, Fracture zones, Cracking (fracturing), Crack propagation, Analysis (mathematics).
- 40-880**  
Development of a standard snow surveying method. (Usovershenstvovanie metoda normal'noi snegos'chekki). Zhidkov, V.A., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.230-234, In Russian with English summary. 25 refs.  
Snow surveys, Snow cover distribution, Snow depth, Surveying.
- 40-881**  
Studying bioindications of moraine-stages in central Tien Shan. (Izucheniye bioindikatsionnykh sledovaniia stadial'nykh moren Tsentral'nogo Tian'-Shania). Solomina, O.N., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.234-240, In Russian with English summary. 17 refs.  
Glacial deposits, Moraines, Age determination, Vegetation factors.
- 40-882**  
Ice accretion at the lower surface of ice shelves. (Namerzanie l'da u nizhnego poverkhnosti shelf'ovyykh lednikov). Raikovskii, I.U.V., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.241-244, In Russian with English summary. 2 refs.  
Ice shelves, Ice bottom surface, Ice accretion, River water, Sea ice distribution.
- 40-883**  
Air inclusions as genetic indications of primary sedimentary-metamorphic ice. (Vozdushnye vklucheniia kak geneticheskie priznaki pervichnykh osadochno-metamorficheskikh l'dov). Zagorodnov, V.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.244-247, In Russian with English summary. 11 refs.  
Samoilov, O.I.U.  
Glacier ice, Ice composition, Impurities, Bubbles, Ice structure.
- 40-884**  
Water-ice balance of Spitsbergen glaciers in the 1980/81 and 1981/82 balance years. (Vodno-ledovoi balans lednikov Shpitsbergena v 1980/81 i 1981/82 balansovykh godakh). Gus'kov, A.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.247-250, In Russian with English summary. 2 refs.  
Troitskii, I.S.  
Mountain glaciers, Glacier ice, Arctic landscapes, Glacier mass balance.
- 40-885**  
Chemical admixtures in the Marukh Glacier and their relation to ice-formation processes. (Khimicheskie primesi v lednike Marukh i ikh svyaz' s protsessami l'dobrazovaniia). Dubinskaia, N.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.250-253, In Russian with English summary. 6 refs.  
Filitsian, E.S.  
Ice formation, Glacier ice, Impurities, Ice composition, Chemical composition, Admixtures.
- 40-886**  
Ice rafting of fragmented materials from rock streams. (O ledovom raznose oblomochnogo materiala kurumov). Govorushko, S.M., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.254-255, In Russian with English summary. 3 refs.  
Rock streams, Sediment transport, Ice rafting, River ice, Alpine landscapes, Glacial rivers.
- 40-887**  
Studying physico-mechanical properties of snow during frequent avalanching in the Elbrus area in January 1983. (Issledovanie fiziko-mekhanicheskikh svoistv snega vo vremia massovogo skhoda lavin v Priel'brus'e v ianvare 1983 g.). Volodicheva, N.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.255-260, In Russian with English summary. 6 refs.  
Oleinikov, A.D., Samoilov, R.S.  
Avalanches, Snow physics, Mechanical properties, Snow cover distribution, Snow depth, Avalanche triggering, USSR—Caucasus.
- 40-888**  
Natural mineralization of snow in the Polar Ural Mountains from electrical conductivity data. (Estestvennaia mineralizatsiia snega na Poliarnom Urale po dannym elektroprovodnosti). Il'ina, E.A., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.261-264, In Russian with English summary. 15 refs.  
Meltwater, Snow composition, Minerals, Water chemistry, Naleds, Electrical resistivity.
- 40-889**  
Snow cover of Northern Khentey. (Snezhnyi pokrov Severnogo Khenteya). Belikovich, A.V., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1984, Vol.51, p.264-266, In Russian with English summary. 1 ref.  
Alpine glaciation, Snow cover distribution, Snow depth, Snow surveys, Vegetation factors, Altitude, Topographic effects.
- 40-890**  
Contrast in Vostok core—changes in climate or ice volume? Robin, G. de Q., *Nature*, Aug. 15-21, 1985, 316(6029), p.578-579, 16 refs.  
Ice cores, Sea level, Ice dating, Glaciation, Oxygen isotopes, Paleoclimatology, Ice volume, Climatic factors, Antarctica—Vostok Station.  
The recovery of a 2083 m ice core at Vostok Station is discussed, together with the core's isotope profile and its importance for the reconstruction of past global climate, ice volume and ocean levels over a full glacial cycle. It is suggested that the difference between present day and interglacial oxygen isotope values could be interpreted as indicating that the surface elevation around Vostok was about 300-350 m lower during the interglacial than now.
- 40-891**  
150,000-year climatic record from antarctic ice. Lorius, C., et al, *Nature*, Aug. 15-21, 1985, 316(6029), p.591-596, 85 refs.  
Ice cores, Ice volume, Oxygen isotopes, Paleoclimatology, Climatic factors, Ice dating, Antarctica—Vostok Station.  
During much of the Quaternary, the Earth's climate has undergone drastic changes, most notably successive glacial and interglacial episodes. The past 150,000 years include such a climatic cycle: the last interglacial, the last glacial and the present Holocene interglacial. A new climatic time series for this period has been obtained using delta O-18 data from an antarctic ice core. (Auth.)
- 40-892**  
Be-10 in ice at Vostok Antarctica during the last climatic cycle. Yiou, F., et al, *Nature*, Aug. 15-21, 1985, 316(6029), p.616-617, 12 refs.  
Ice dating, Ice composition, Climatic factors, Oxygen isotopes, Glaciation, Antarctica—Vostok Station.  
The recovery of a 2083-m ice core at Vostok, Antarctica, together with an extended isotope chronology, permits an extension of Be-10 studies over the whole of the last climatic cycle. Measurements which show an excellent correlation with the oxygen isotope record are reported. The results imply that precipitation rates in the Antarctic during the last interglacial were similar to those of the Holocene, but were roughly halved during the last glaciation. (Auth. mod.)
- 40-893**  
Surface damage by cooling of concrete frozen layer by layer. (Die Entstehung von Oberflächenschäden durch das Abkühlen von schichtweise gefrorenem Beton). Meier, U.G., *Material und Technik*, June 1978, 78(2), p.92-95, In German with French summary. 8 refs.  
Concrete freezing, Concrete strength, Salting, Freeze thaw cycles, Chemical analysis, Water content, Stresses, Analysis (mathematics), Damage.

## 40-894

Origin and effect of the supercooling of pore water in cement paste and concrete. (Die Entstehung und Auswirkung der Unterkühlung von Porenwasser in Zementstein und Beton). Meier, U.G., *Material und Technik*, Sep. 1978, 78(3), p.132-135. In German with English and French summaries. 7 refs.  
Concrete durability, Concrete freezing, Cements, Salting, Water pressure, Frost action, Supercooling, Ice formation, Damage.

## 40-895

Temperature effects on concrete. Proceedings. Symposium on Temperature Effects on Concrete, Kansas City, MO, June 21, 1983, *American Society for Testing and Materials. Special technical publication*, 1985, No.858, 184p., Refs. passim. For selected papers see 40-896 through 40-900.  
Naik, T.R., ed.

Concrete strength, Concrete durability, Concrete curing, Winter concreting, Compressive properties, Elastic properties, Temperature effects, Meetings, Cold weather construction.

## 40-896

Strength development of concrete cured under Arctic Sea conditions.

Aitcin, P.-C., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.858, p.20-23, 3 refs.

Cheung, M.S., Shah, V.K.  
Concrete strength, Concrete curing, Winter concreting, Compressive properties, Cold weather construction, Sea water, Caissons, Temperature effects, Arctic Ocean.

## 40-897

Static and cyclic behavior of structural lightweight concrete at cryogenic temperatures.

Berner, D., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.858, p.21-37, 18 refs.

Gerwick, B.C., Jr., Polivka, M.  
Lightweight concretes, Cryogenic structures, Off-shore structures, Concrete strength, Freeze thaw cycles, Temperature effects, Concrete structures, Mechanical properties, Ice formation, Ice elasticity, Compressive properties, Loads (forces).

## 40-898

Maturity functions for concrete cured during winter conditions.

Naik, T.R., *American Society for Testing and Materials. Special technical publication*, 1985, No.858, p.107-117, 12 refs.

Winter concreting, Concrete curing, Concrete strength, Compressive properties, Temperature effects, Time factor, Analysis (mathematics).

## 40-899

Temperature effects on strength and elasticity of concrete containing admixtures.

Nasser, K.W., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.858, p.118-133, 7 refs.

Chakraborty, M.  
Concrete strength, Freeze thaw cycles, Concrete admixtures, Concrete hardening, Structural analysis, Temperature effects, Elastic properties, Compressive properties.

## 40-900

Willow Island collapse: a maturity case study.

Halvorsen, G.T., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.858, p.168-176, 13 refs.

Farahmandnia, A.  
Reinforced concretes, Concrete strength, Cooling towers, Concrete curing, Winter concreting, Temperature effects, Safety.

## 40-901

Paleoclimate analysis and modeling.

Hecht, A.D., ed, New York, John Wiley & Sons, 1985, 445p., Refs. passim. For selected papers see 40-902 through 40-904 or F-32602, I-32599 through I-32601, and I-32603.

Paleoclimatology, Ice dating, Snow cover distribution.

This collection of papers is a response to the need for an assessment of the databases upon which information about past climates has evolved, and of the techniques by which that information can be refined, from each of several principal categories of climate-recording media.

## 40-902

Paleoclimatology: a retrospective of the past 20 years.

Hecht, A.D., *Paleoclimate analysis and modeling*. Edited by A.D. Hecht, New York, John Wiley & Sons, 1985, p.1-25, 60 refs.

DLC QC884.P35

Paleoclimatology, Climatic changes, Ice dating, Ice models.

The following developments, considered to have opened broader opportunities in paleoclimate research and to represent the major advances in the past 20 years, are discussed: development of isotopic geochemical techniques and accurately dated stratigraphy, methodologies for reconstruction of past ocean and continental temperatures, reconstruction of ice age geography, atmospheric and ocean general circulation models and simulation of ice age climate, theory of plate tectonics, ice core drilling and analysis techniques, and documentation of orbital effects on climate.

## 40-903

Climate studies in ocean cores.

Ruddiman, W.F., *Paleoclimate analysis and modeling*. Edited by A.D. Hecht, New York, John Wiley & Sons, 1985, p.197-257, 145 refs.

DLC QC884.P35

Ice models, Paleoclimatology, Ice volume.

Studies are reviewed of the earth's climatic history on an ice age time scale, with deep-sea cores as multi-channel climatic recorders. Two climate-related signals are emphasized: the global ice volume, and local sea-surface temperature. Among numerous maps and charts, one, relating to a study of the Late Quaternary climatic history of the Antarctic, shows plots of 3 parameters measured in a subantarctic Indian Ocean core from planktonic foraminifera and radiolaria: oxygen isotopic composition, estimated summer sea surface temperature, and percent of *Cyclodophora jayvisiana* in radiolarian fauna.

## 40-904

Snow and ice data.

Barry, R.G., *Paleoclimate analysis and modeling*. Edited by A.D. Hecht, New York, John Wiley & Sons, 1985, p.259-290, 146 refs.

DLC QC884.P35

Climate, Ice cover, Sea ice distribution, Snow cover distribution.

Discussed are studies on the role of ice and snow in the climate system based on stratigraphic evidence of past accumulations, and studies on the short-term interactions between snow and ice phenomena and atmospheric circulation. The principal paleoclimatic results obtained from ice core records are summarized.

## 40-905

Glacial sedimentary environments.

Ashley, G.M., ed, Society of Economic Paleontologists and Mineralogists. SEPM short course No.16, Tulsa, OK, SEPM, 1985, 246p., Refs. passim.

Shaw, J., ed, Smith, N.D., ed.

Glacial deposits, Periglacial processes, Paleoclimatology, Glacial hydrology, Sedimentation, Glacier mass balance, Topographic features, Meltwater, Glacier flow, Ice sheets, Glacier beds.

## 40-906

Shallow snow performance of tracked vehicle.

Hirobe, R., *Soils and foundations*, June 1985, 25(2), p.153-154, Discussion, and reply. 3 refs. For T. Muro's paper see 38-4134.

Muro, T.

Tracked vehicles, Snow density, Snow compaction, Snow cover, Snow melting, Snow depth, Loads (forces), Shear strength, Trafficability.

## 40-907

Fluorescence study on characterization of liquid domains formed in a frozen acetone-water mixture.

Kano, K., et al, *Journal of physical chemistry*, Aug. 15, 1985, 89(17), p.3748-3752, 20 refs.

Zhou, B., Hashimoto, S.

Freezing, Water chemistry, Liquid phases, Luminescence, Spectra, Ice crystals, Unfrozen water content, Temperature effects, Molecular structure.

## 40-908

Possible new criterion for accretion of ice on overhead conductors.

Havard, D.G., *Ontario hydro research quarterly*, Third quarter, 1973, 25(3), p.1-6, 15 refs.

Power line icing, Ice accretion, Ice loads, Snow accumulation, Ice cover thickness, Transmission lines, Glaze.

## 40-909

Insulation requirements and thermal stresses in winter concreting.

Mustard, J.N., et al, *Ontario hydro research quarterly*, First quarter, 1976, 28(1), p.11-19, 9 refs.

Ghosh, R.S.

Winter concreting, Cold weather construction, Thermal stresses, Thermal insulation, Damage, Frost action, Temperature gradients.

## 40-910

Internal stresses in frozen ground.

Williams, P.J., et al, *Canadian geotechnical journal*, Aug. 1985, 22(3), p.413-416, 7 refs.

Wood, J.A.

Frozen ground physics, Frozen ground mechanics, Frost heave, Stresses, Ice lenses, Phase transformations, Thermodynamics, Soil water migration, Temperature gradients, Pressure.

## 40-911

Icing on submerged tubes: a study of occlusion.

Lock, G.S.H., et al, *International journal of heat and mass transfer*, Sep. 1985, 28(9), p.1689-1698, With French, German and Russian summaries. 5 refs.

Kaiser, T.M.V.

Icing, Ice growth, Pipes (tubes), Heat flux, Freezing, Water flow, Glaze, Ice formation, Models, Water temperature.

## 40-912

Phase transition of cubic ice Ic.

Minagawa, I., *Physical Society of Japan. Journal*, Apr. 1985, 54(4), p.1610-1614, 7 refs.

Cubic ice, Ice physics, Ice crystal structure, Phase transformations, Analysis (mathematics).

## 40-913

Parallel ridges at the former ice-divide zone in Dalarna, Sweden—possible crevasse fillings.

Björklund, G., *Geografiska annaler*, 1985, 67A(1-2), p.129-131, 6 refs.

Ground ice, Crevasse, Sweden.

## 40-914

Taiga of the USSR. (Taiga SSSR).

Parmuzin, I.U.P., Moscow, Mysl', 1985, 303p., In Russian with English table of contents enclosed. Refs. p.299-302.

Forest soils, Environmental protection, Cryogenic soils, Taiga, Baykal Amur railroad, Human factors, Soil formation, Permafrost distribution, Permafrost hydrology, Topographic features, Vegetation, Animals.

## 40-915

Thermal insulation of pipelines for petroleum products and reservoirs. (Teplovaia izoliatsiia nefte-produktoprovodov i rezervuarov).

Tugunov, P.I., Moscow, Nedra, 1985, 152p., In Russian with English table of contents enclosed. 12 refs.

Storage tanks, Transportation, Pipeline insulation, Petroleum products, Thermal insulation, Design, Construction materials.

## 40-916

Microwave radiometry of earth's surface features. (Mikrovolnovaia radiometriia zemnykh pokrovov).

Bogorodskii, V.V., et al, Leningrad, Gidrometeoizdat, 1985, 272p., In Russian with English table of contents enclosed. 97 refs.

Kozlov, A.I.

Radiometry, Polarization (waves), Microwaves, Radio echo soundings, Aerial surveys, Spacecraft, Snow cover distribution, Snow depth, Ice cover thickness, Soils, Rocks, Ice dating.

## 40-917

Gas tanks. (Gazgoldery).

Berezhkovskii, M.I., Moscow, Khimiia, 1985, 109p. (Pertinent p.86-108). In Russian with abridged English table of contents enclosed. Refs. p.108-109.

Steel structures, Storage tanks, Liquefied gases, Thermal insulation.

## 40-918

Thermophysical properties of gas hydrates. (Termofizicheskie svoistva gazovykh gidratov).

Groisman, A.G., Novosibirsk, Nauka, 1985, 94p., In Russian with abridged English table of contents enclosed. 184 refs.

Clathrates, Natural gas, Fines, Physical properties, Saturation, Thermal properties, Hydrates.

## 40-919

Flora of the Magadan Region. (Flora Magadanskoi oblasti).

Khokhriakov, A.P., Moscow, Nauka, 1985, 397p., In Russian with English table of contents enclosed. Refs. p.349-358.

Vegetation, Plant ecology, Classifications, Manuals, Subarctic regions, Environmental protection.

40-920

Effect of human activities on water resources of Yakutia. (Antropogennoe vozdeistvie na vodnye resursy Iakutii). Shadrin, A.P., ed. Yakutsk, Yakut fil. SO AN SSSR, 1984, 69p., In Russian. For selected papers see 40-921 through 40-924. Refs. passim.

Ice formation, Water reserves, Icebound rivers, Rivers, Permafrost hydrology, Active layer, Permafrost beneath rivers, Lakes, Discharge, Permafrost control, Runoff, Environmental impact, Ground water, Economic development, Environmental protection.

40-921

Estimating changes in water quality due to economic development of the North (exemplified by southern Yakutia). (Otsenka izmenenii kachestva vod pri osvoenii ralonov Severa (na primere Iuzhnoi Iakutii)). Konstantinov, A.F., Antropogennoe vozdeistvie na vodnye resursy Iakutii (Effect of human activities on water resources of Yakutia) edited by A.P. Shadrin, Yakutsk, Yakut fil. SO AN SSSR, 1984, p.15-20, In Russian. 12 refs.

Rivers, Wastes, Economic development, Ice conditions, Mining, Pollution, Thermal regime, Subpolar regions, Human factors, Permafrost distribution.

40-922

Microclimatic effect of northern water reservoirs. (Vliianie vodokhranilishch Severa na mikroklimat). Tsareva, S.P., Antropogennoe vozdeistvie na vodnye resursy Iakutii (Effect of human activities on water resources of Yakutia) edited by A.P. Shadrin, Yakutsk, Yakut fil. SO AN SSSR, 1984, p.28-36, In Russian. 9 refs.

Microclimatology, Lakes, Water reserves, Permafrost beneath lakes, Permafrost hydrology, Environmental impact.

40-923

Analysis of changes in the Vilyuy River regime induced by flow control by the power plant's reservoir. (Analiz izmeneniia rezhima reki Viliui posle zaregulirovaniia stoka vodokhranilishchem GES). Nogovitsyn, D.D., et al, Antropogennoe vozdeistvie na vodnye resursy Iakutii (Effect of human activities on water resources of Yakutia) edited by A.P. Shadrin, Yakutsk, Yakut fil. SO AN SSSR, 1984, p.41-55, In Russian. 1 ref.

Kusatov, K.I. Flow control, Reservoirs, Ice conditions, Permafrost beneath rivers, Permafrost hydrology, Electric power, Rivers.

40-924

Freeze-up of rivers in the continuous permafrost zone. (O promerzanii rek v zone sploshnoi mnogoletnei merzloty). Arzhakova, S.K., Antropogennoe vozdeistvie na vodnye resursy Iakutii (Effect of human activities on water resources of Yakutia) edited by A.P. Shadrin, Yakutsk, Yakut fil. SO AN SSSR, 1984, p.55-65, In Russian. 13 refs.

Icebound rivers, River flow, Runoff, Ice formation, Ice conditions, Permafrost beneath rivers, Permafrost hydrology, Active layer, Frost penetration.

40-925

Physico-mathematical processing of satellite-scanning video data when mapping regional snow cover. (Fiziko-matematicheskie osnovy obrabotki kosmicheskoi skanernoi videoinformatsii pri kartografirovani zasneshennosti territorii). Ushakova, L.A., et al, Leningrad. Gosudarstvennyi nauchno-issledovatel'skii tsentr izucheniia prirodnikh resursov. Trudy, 1985, Vol.23, p.97-110, In Russian. 12 refs.

Permitina, L.I., Tishchenko, A.P. Spaceborne photography, Radar photography, Maps, Snow cover distribution, Snow depth, Albedo, Snow physics.

40-926

Loads on mine-shaft timbering and the stress-strain state of massive rocks induced by freezing and lowering of the water table. (O nagruzhenosti krep'i stvolov i napriazhenno-deformirovannom sostoianii massiva porod pod vlianiem zamorazhivaniia i vodoponizheniia). Drobyshev, V.F., Prilozhenie rezul'tatov issledovaniia polei napriazhenii k resheniiu zadach gornogo dela i inzhenernoi geologii (Application of the results of studying stress fields to the solution of problems in mining and engineering geology) edited by G.I. Gorbunov, Apatity, 1985, p.84-89, In Russian. 5 refs.

Mining, Permafrost control, Artificial freezing, Mine shafts, Walls, Supports, Ground ice, Freeze thaw cycles.

40-927

Proceedings. Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, U.S. Department of the Navy, 1985, 301p., Refs. passim. For individual papers see 40-928 through 40-964.

Sea ice distribution, Remote sensing, Offshore structures, Acoustic measurement, Ice physics, Oceanography, Ice conditions, Ice loads, Meetings, Underwater acoustics, Microwaves, Pressure ridges, Ice edge.

40-928

MIZEX past operations and future plans. Horn, D.A., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.1-7, 3 refs.

Johnson, C.L. Ice surveys, Ice edge, Ice cover effect, Sea ice distribution, Remote sensing, Acoustic measurement, Meteorology, Oceanography, Research projects.

40-929

International ice patrol operations. Edwards, N.C., Jr., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.8-14, 6 refs.

Murphy, D.L. Icebergs, Sea ice distribution, Side looking radar, Ice navigation, Drift, Airborne radar, Ice forecasting.

40-930

Remote sensing for polar icebreaker navigation in sea ice.

Hayes, R.M., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.15-24, 23 refs.

Ice navigation, Remote sensing, Icebreakers, Sea ice distribution, Ice conditions, Microwaves, Radiometry.

40-931

FNOC Arctic operational support. Pollak, K., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.25-29, 14 refs.

Clancy, R.M. Ice models, Ice forecasting, Weather forecasting, Oceanography, Remote sensing, Ice navigation.

40-932

Airborne gravity measurement system for use in the Arctic.

Brozina, J.M., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.30-33, 2 refs.

Ice conditions, Sea ice, Gravimetric prospecting, Airborne radar, Navigation.

40-933

Satellite telemetry buoys for collection of Arctic acoustic and environmental data.

Buck, B.M., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.34-38, 11 refs.

Anderson, J.O. Subglacial observations, Telemetry equipment, Acoustics, Remote sensing, Ice cover effect, Oceanography, Wave propagation.

40-934

Arctic temperature—conductivity buoys.

Morison, J., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.39-43, 5 refs.

Electrical resistivity, Water temperature, Ocean currents, Sea ice distribution, Salinity, Measuring instruments, Arctic Ocean.

40-935

Generation and movement of ice islands near the Canadian Arctic Archipelago.

Sackinger, W.M., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.44-49, 10 refs.

Yan, M. Ice islands, Ice mechanics, Offshore structures, Wind factors, Ice pressure, Pack ice.

40-936

AIWEX field operations planning and execution. Heilberg, A., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.50-52. Logistics, Ice conditions, Navigation, Floating structures, Safety, Airplanes, Polar regions.

40-937

Introduction to service ARGOS and drifting buoy logistics.

Partridge, R.M., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.53-58, 6 refs.

Logistics, Floating structures, Remote sensing, Meteorological data, Oceanography, Telemetry equipment, Ships, Airplanes, Buoys.

40-938

Effect of the physical properties of ice on the high frequency acoustic backscatter from an ice keel model.

Chin-Bing, S., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.59-70, 7 refs.

Ice physics, Acoustic measurement, Backscattering, Ice models, Wave propagation.

40-939

Simulation model for high-frequency underice acoustic backscattering.

Bishop, G.C., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.71-79, 7 refs.

Subglacial observations, Pack ice, Acoustic measurement, Backscattering, Wave propagation, Ice models, Analysis (mathematics).

40-940

High frequency acoustic reflection from flat sea ice. Posey, J.W., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.80-89, 6 refs.

Branch, G.H., Chin-Bing, S.A., Tango, G. Ice acoustics, Sea ice, Ice water interface, Acoustic measurement, Wave propagation, Reflection, Ice cover thickness, Snow cover effect, Models.

40-941

Use of penetrators to estimate the properties of ice in the Arctic regions.

Yew, C.H., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.90-95, 6 refs.

Ice physics, Ice acoustics, Acoustic measurement, Wave propagation, Analysis (mathematics), Saline ice, Reflection.

40-942

Acoustic bottom interaction considerations in the Arctic.

Geddes, W., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.96-106, 16 refs.

Matthews, J.E. Acoustic measurement, Ocean bottom, Bottom sediment, Geophysical surveys, Models, Sediments, Underwater acoustics, Arctic Ocean.

40-943

Environmental acoustic data base development in the Arctic.

Kerr, G., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.107-110, 5 refs.

Sea ice distribution, Ice edge, Underwater acoustics, Oceanography, Sound transmission, Sound waves, Models, Wave propagation.

40-944

Under-ice ambient noise variations as related to observable ice motion parameters.

Lewis, J.K., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985, Proceedings, U.S. Department of the Navy, 1985, p.111-113, 1 ref.

Denner, W.W. Ice mechanics, Acoustic measurement, Subglacial observations, Sound waves, Noise (sound), Wind factors.

## 40-945

**Horizontal directionality of ice edge noise.**  
Votaw, C., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.114-122, 2 refs.  
Yang, T.C., Giellis, G., Diachok, O.I.  
Ice edge, Noise (sound), Acoustic measurement, Sound waves, Spectra.

## 40-946

**Characteristics of industrial sounds in the shallow Beaufort Sea.**  
Greene, C.R., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.123-137.  
Underwater acoustics, Sound transmission, Wave propagation, Offshore drilling, Marine biology, Economic development, Seismic surveys, Beaufort Sea.

## 40-947

**Numerical modeling of acoustic ice interaction in the Arctic.**  
Lawrence, T.N., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.138-148, 13 refs.  
Tango, G.  
Ice acoustics, Ice water interface, Wave propagation, Acoustics, Reflection, Sound transmission, Ice cover thickness, Ice models.

## 40-948

**Multi-bounce, single-scatter, ray theoretic model for under-ice predictions.**  
Tolstoy, A., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.149-154, 4 refs.  
Berman, D.H., Wright, E.B., Baer, R.N.  
Underwater acoustics, Subglacial observations, Acoustics, Wave propagation, Models, Ice cover effect, Backscattering, Surface properties, Ice surface.

## 40-949

**Calculation of an effective thickness term for sea ice using Lagrangian data.**  
Lewis, J.K., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.155-158, 4 refs.  
Denner, W.W.  
Ice cover thickness, Ice mechanics, Remote sensing, Ice conditions, Mathematical models, Wind factors, Ice cover strength, Stresses, Pack ice, Velocity.

## 40-950

**Curious plumes from Bennett Island.**  
St. Amand, P., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.159-166, 18 refs.  
Clark, J., Matson, M.  
Natural gas, Infrared photography, Sea ice, Remote sensing, Water temperature, Sea water, Temperature, LANDSAT, USSR—Bennett Island.

## 40-951

**Frequency-domain electromagnetic ice-sounding.**  
Won, I.J., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.167-172, 9 refs.  
Smits, K.  
Ice cover thickness, Electromagnetic prospecting, Sounding, Wave propagation, Ice water interface, Sea water, Mathematical models, Electrical resistivity.

## 40-952

**Radiometric imagery of sea ice.**  
Hollinger, J.P., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.173-177, 5 refs.  
Keller, M.R.  
Sea ice distribution, Radiometry, Microwaves, Ice edge, Ice conditions, Ice mechanics, Variations, Mapping.

## 40-953

**Remote sensing of the marginal ice zone during MIZEX 83 and 84.**  
Shuchman, R.A., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.178-189, 16 refs.  
Burns, B.A.  
Ice edge, Sea ice distribution, Remote sensing, Ice conditions, Oceanography, Microwaves, Airborne radar, Marine meteorology.

## 40-954

**Some results of the MIZEX-West ice observation program.**  
Muensch, R.D., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.190-197, 13 refs.  
Cavalieri, D.J., Stegen, G.R.  
Ice surveys, Sea ice distribution, Oceanography, Meteorological data, Remote sensing, Thermal imagery, Ice conditions, Ice edge, Ice mechanics, Infrared photography.

## 40-955

**Variations in the Bering Sea ice coverage related to large-scale atmospheric circulation patterns.**  
Englebreton, R.E., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.198-204, 9 refs.  
Sea ice distribution, Atmospheric circulation, Statistical analysis, Variations, Charts, Bering Sea.

## 40-956

**Method for determining sea ice type and inferred ice thickness distributions from aerial photographs.**  
Farmer, L.D., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.205-213.  
Eppler, D.T.  
Sea ice distribution, Ice physics, Ice cover thickness, Ice conditions, Aerial surveys, Albedo, Icebergs, Photography.

## 40-957

**Pressure ridge morphology and physical properties of sea ice in the Greenland Sea.**  
Tucker, W.B., et al, MP 1935, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.214-223, 13 refs.  
Gow, A.J., Weeks, W.F.  
Pressure ridges, Ice structure, Ice physics, Sea ice, Salinity, Grounded ice, Ice crystal structure, Ice floes, Greenland Sea.  
Field investigations of pressure ridge sails have shown that ridge height is limited by the thickness of the ice that deformed. Sail height and width can be conveniently expressed as functions of the thickness of the ice blocks contained in the ridge. Surface dimensions of the blocks are also related to ice thickness. Ridge height may be determined by the ability of the parent sheet to support the loading imposed by the ridge or by the type of failure occurring. Some insight into the structure of ridge keels may result from detailed study of the sails. The physical properties of sea ice in the Fram Strait region of the Greenland Sea were examined as part of the MIZEX field program in 1984. The properties measured at each sampling site included salinity, temperature, thickness, crystal structure and snow depth. The measured salinities agreed well with those measured elsewhere in the Arctic during summer. Crystal texture analysis indicated that about 75% of the ice consisted of columnar type crystal structure. The remaining 25% consisted of granular ice.

## 40-958

**Coherence estimates of under-ice profiles in the Beaufort Sea; an indicator of three dimensional structures.**  
Levine, E.R., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.224-240, 14 refs.  
Overdeed, S.E., Connors, D.N.  
Ice bottom surface, Subglacial observations, Pressure ridges, Acoustic measurement, Profiles, Ice cover thickness, Wave propagation, Beaufort Sea.

## 40-959

**Number of elastic constants of sea ice.**  
Floyd, E.R., et al, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.241-243, 5 refs.  
Markham, B.L.  
Ice elasticity, Sea ice, Ice crystal structure, Analysis (mathematics), Stratification.

## 40-960

**Mechanical properties of multi-year pressure ridge samples.**  
Richter-Menge, J.A., MP 1936, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.244-251, 19 refs.  
Pressure ridges, Ice mechanics, Compressive properties, Tensile properties, Ice density, Mechanical tests, Salinity.

Over 500 laboratory tests have recently been completed on ice samples collected from multi-year pressure ridges in the Alaskan Beaufort Sea. Tests were performed in uniaxial constant-strain-rate compression and tension and in confined compression. The tests were conducted at two temperatures, -5 and -20 °C, and four strain rates ranging from 1/100 to 1/100,000/s. This discussion summarizes the sample preparation and testing techniques used in the investigation and presents data on the compressive, tensile and confined compressive strength of multi-year ridge samples. This information is necessary for designing arctic structures and vessels that must withstand the impact of a multi-year pressure ridge.

## 40-961

**Experience with a biaxial ice stress sensor.**  
Cox, G.F.N., MP 1937, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.252-258, 10 refs.  
Ice pressure, Ice strength, Stresses, Loads (forces), Offshore structures, Ice mechanics, Ice loads, Tests, Sea ice, Ice navigation.

A biaxial ice stress sensor has been developed to measure the magnitude and direction of the principal stresses in an ice sheet. Controlled laboratory tests indicate that the sensor has a resolution of 20 kPa and an accuracy of better than 10% under a variety of loading conditions. The sensor has been successfully used to measure thermal ice pressures in lakes and ice loads on a caisson-retained island in the Beaufort Sea.

## 40-962

**Numerical simulation of a sea ice induced gouges on the shelves of the polar oceans.**  
Weeks, W.F., et al, MP 1938, Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.259-265, 16 refs.  
Tucker, W.B.  
Ice scouring, Computer programs, Mathematical models, Ice shelves, Sea ice, Sediment transport, Ocean bottom, Distribution, Statistical analysis, Stratigraphy, Ocean currents.

A simulation model for sea ice-induced gouges on the shelves of the polar seas is developed by assuming that the annual occurrence of new gouges is given by a Poisson distribution, the locations of the gouges are random, and the distribution of gouge depths is specified by an exponential distribution. Once a gouge is formed it is infilled by assuming a sediment input based on stratigraphic considerations and by calculating bed-load transport using methods from sediment transport theory. If currents are sufficient to transport sediment, rapid infilling of gouges occurs. In that these threshold currents are small for typical grain sizes, this suggests that the gouging record commonly represents only a few tens of years.

## 40-963

**Cryospheric data management system for special sensor microwave imager DMSP data: a status report.**  
Weaver, R., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.266-270, 11 refs.  
Sea ice distribution, Microwaves, Remote sensing, Research projects, Humidity, Precipitation (meteorology), Soil water, Oceanography.

## 40-964

**Joint ice center capabilities and limitations in sea ice analysis and forecasting.**  
Rosner, H.S., Arctic Oceanography Conference and Workshop, Hattiesburg, MS, June 11-14, 1985. Proceedings, U.S. Department of the Navy, 1985, p.271-277, 6 refs.  
Sea ice distribution, Ice conditions, Remote sensing, Ice surveys, Ice forecasting, Microwaves, Aerial surveys, Seasonal variations, Organizations.

## 40-965

**Determination and forecasting of road surface temperature in the Cost 30 Automatic Road Station (CARS).**  
Nysten, E., Finnish Meteorological Institute, Helsinki. Technical report, Mar. 1980, No 23, 32p., 12 refs.  
Roads, Surface temperature, Road icing, Snow cover effect, Heat flux, Forecasting, Mathematical models, Computer applications, Trafficability.

40-966

All-Union conference on the problems of soil cryogenics, 4th, Vorkuta, Aug. 7-9, 1985. Abstracts. (Teziy dokladov). Vsesoiuznaia konferentsiia po problemam pochvennogo kriogeneza, 4th, Vorkuta, Aug. 7-9, 1985, Sytykvar, 1985, 101p. In Russian with English table of contents enclosed.

Zaboeva, I.V., ed. Paleoclimatology, Permafrost origin, Hydrothermal processes, Environmental protection, Cryogenic soils, Microclimatology, Permafrost distribution, Tundra, Theories, Human factors, Taiga, Soil formation, Deserts, Permafrost physics, Forest tundra.

40-967

Modification of river flow in southern Siberia. (Puti preobrazovaniia rechnogo stoka na iuge Sibiri). Nikolaev, V.A., ed. Novosibirsk, 1984, 137p. In Russian. For selected papers see 40-968 and 40-969. Refs. passim.

Shore erosion, Electric power, Hydraulic structures, Permafrost beneath rivers, Flow control, Slope processes, Rivers, Avalanches, Thermal regime, Alpine landscapes, Lakes, Mudflows, Ice conditions, Rock streams.

40-968

Changes in thermal regime of the Yenisey and Ob rivers below the water reservoirs of the Krasnoyarsk and Novosibirsk power plants. (Izmenenie termicheskogo rezhima Eniseia i Obi nizhe vodokhranilishch Krasnoyarskoi i Novosibirskoi GES). Orlova, G.A., Puti preobrazovaniia rechnogo stoka na iuge Sibiri (Modification of river flow in southern Siberia) edited by V.A. Nikolaev, Novosibirsk, 1984, p.23-39, In Russian. 16 refs.

Lakes, Water temperature, Rivers, Electric power, Permafrost beneath rivers, Ice conditions, Thermal regime, Hydraulic structures, Dams, Flow control.

40-969

Formation of shores of the Sayany water reservoir during the first stage of its filling. (Formirovanie beregov Saianskogo vodokhranilishcha v pervuiu stadiiu ego zapolneniia). Kuskovskii, V.S., Puti preobrazovaniia rechnogo stoka na iuge Sibiri (Modification of river flow in southern Siberia) edited by V.A. Nikolaev, Novosibirsk, 1984, p.65-76, In Russian. 7 refs.

Reservoirs, Shore erosion, Slope processes, Shoreline modification, Mudflows, Alpine landscapes, Rock streams, Electric power, Ice erosion, Frost action.

40-970

Report of the Norwegian Antarctic Research Expedition (NARE) 1984/85. Orheim, O., ed. Norsk Polarinstitut, Rapportserie, No.22, Oslo, Norsk Polarinstitut, 1985, 138p. For individual papers see 40-971 through 40-973 or A-32617, B-32619, B-32621, B-32633, C-32618, E-32620, E-32624 through E-32628, F-32630, I-32523 and J-32629.

Expeditions, Geology, Plants (botany), Sea ice, Ice shelves, Antarctica—Queen Maud Land.

The expedition involved 28 scientists working in Antarctica during January and February 1985, and this report contains 15 contributions from 22 of them. The first section presents a broad account of the expedition followed by papers on a variety of topics based on work done by a 10-person group at Camp Norway 5 and in the region of the Gjelsvik and Mühlig-Hofmann Mountains. The next section covers geological and geophysical work done from Camp Norway 6. The last part describes marine research done from the expedition vessel, K/V Andenes in the Weddell Sea. (Auth.mod.)

40-971

Meteorological and glaciological studies in Dronning Maud Land. Gjessing, Y., Norsk Polarinstitut. Rapportserie, 1985, No.22, Norwegian Antarctic Research Expeditions, Publication No.78, p.63-66, 2 refs. Microclimatology, Nunataks, Ice sheets, Mass balance, Antarctica—Queen Maud Land.

A report is given of three studies conducted during NARE 84/85: studies of the microclimate in the vegetation on nunataks; a survey of the SO<sub>4</sub>/Na ratio and of the content of heavy metals in snow; studies of the energy and mass balance of the blue-ice area near Jutulssisen. Details of these studies are outlined. (Auth.)

40-972

Marine geological studies on the Weddell Sea shelf. Solheim, A., et al. Norsk Polarinstitut. Rapportserie, 1985, No.22, Norwegian Antarctic Research Expeditions, Publication No.78, p.101-115, 14 refs. Kristoffersen, Y.

Marine geology, Sedimentation, Ice scoring, Icebergs, Antarctica—Weddell Sea.

The southern Weddell Sea is identified as a key area to the understanding of the fragmentation of Gondwanaland and the

evolution of the Weddell Sea. In the furtherance of that understanding, the NARE program has established four major objectives: mapping areas for future bedrock sampling, timing and extent of the last withdrawal of ice from the Weddell seabed, sediment distribution and deposition rate outside an ice shelf. Methods and equipment used to achieve these goals and the degree of success attained are discussed.

40-973

Iceberg research and other glaciological studies from K/V Andenes. Kristensen, M., et al. Norsk Polarinstitut. Rapportserie, 1985, No.22, Norwegian Antarctic Research Expeditions, Publication No.78, p.127-138, 11 refs. Orheim, O.

Icebergs, Ice bottom surface, Sea ice, Ice cover thickness.

Soundings were made of icebergs and shelf ice to gather size and shape data. Techniques and instruments used are discussed and measurements of various physical motions of icebergs such as roll, pitch, heave, sway and surge, and flexure are reported. Aerial photographs were shot and cores were taken from shelves and bergs.

40-974

Soviet-Icelandic Sea Ice Expedition to the sea north of Iceland. Jakobsson, T., Research Institute Nedri As. Bulletin, 1984, No.42, Hveragerdi, Iceland, 1984, 55p.

Sea ice, Ice physics, Ice conditions, Weather observations, Oceanography, Expeditions, Ice edge, Synoptic meteorology, Ocean currents.

40-975

Internal stresses in soils during frost heaving. Williams, P.J., et al. Canada. Department of Energy, Mines and Resources. Earth Physics Branch. Open file, 1985, No.85-15, 53p. + appends., With French summary. 6 refs.

Wood, J.A.

Frost heave, Soil pressure, Stresses, Soil freezing, Measuring instruments, Tests.

40-976

Yukon River ice: freeze-up data (1883-1975). Fountain, A.G., et al. U.S. Geological Survey. Open file report, 1984, 84-601, 51p., 6 refs.

Vaughn, B.H.

River ice, Freezeup, Statistical analysis, Ice navigation, Synoptic meteorology, United States—Alaska—Yukon River.

40-977

Sea-ice information services in the World, with Supplement No.1. World Meteorological Organization, WMO publication, 1981, No.574, 108 + 104 p.

Sea ice distribution, Ice forecasting, Data processing, Charts.

40-978

ICE-MOSES. The theory of a new offshore electrical method and a proposal for an Arctic trial.

Edwards, R.N., Canada. Department of Energy, Mines and Resources. Earth Physics Branch. Open file, 1985, No.85-14, 87p., With French summary. 18 refs.

Subsea permafrost, Ocean bottom, Sounding, Electrical resistivity, Marine deposits, Electromagnetic prospecting, Analysis (mathematics), Porosity.

40-979

Ground ice investigations, Klondike District, Yukon Territory.

French, H.M., et al. Canada. Department of Energy, Mines and Resources. Earth Physics Branch. Open file, 1985, No.85-12, 35p., With French summary. 20 refs.

Pollard, W.H.

Ground ice, Permafrost physics, Stratigraphy, Heat transfer, Ice crystal structure, Geocryology, Mapping, Canada—Yukon Territory—Klondike District.

40-980

Interaction of particles and a moving ice-liquid interface.

Köber, C., et al. Journal of crystal growth, Sep. 1985, 72(3), p.649-662, 37 refs.

Rau, G., Cosman, M.D., Cravalho, E.G. Ice water interface, Liquids, Freezing, Particles, Thermal gradients, Microstructure, Velocity, Analysis (mathematics).

40-971

Temperature dependence of the equilibrium form of ice.

Colbeck, S.C., Journal of crystal growth, Sep. 1985, 72(3), MP 1939, p.726-732, 25 refs.

Ice crystal growth, Ice crystal structure, Snow crystal structure, Temperature effects, Plates, Surface roughness, Experimentation.

Individual crystals are grown under controlled conditions at temperatures between -0.6 and -20°C at rates as low as 1:10,000

g/year and supersaturations as low as  $6.5 \times 10^{-10}$ . The transition between the kinetic growth form and the equilibrium form is clearly distinguished at temperatures between -2 and -10°C where the equilibrium form is a well-rounded plate with an aspect ratio of about 2.5. At temperatures below -11°C the equilibrium form is a hexagonal prism of about the same aspect ratio. This transition coincides with the rapid increase in surface roughening on the prism faces at temperatures above -10°C. The equilibrium form is a fully rounded particle just below 0°C although we had expected the fully rounded particle to prevail down to at least -5°C. Furthermore, there are unresolved differences between these experimental results and observations of crystals from the seasonal snow cover where particles are fully rounded at slow growth rates and low temperatures.

40-982

On the determination of inclusions in crystals grown from aqueous solutions.

Looser, H., et al. Journal of crystal growth, Sep. 1985, 72(3), p.743-744, 3 refs.

Ehrensperger, M., Arend, H. Ice crystal growth, Ice composition, Solutions, Calorimetry, Chemical analysis.

40-983

Frost and de-icing salt resistance of hardened cement paste made from various cements and with various fly-ash admixtures. (Frost-Tausalz-Widerstand von Zementstein aus verschiedenen Zementarten und mit unterschiedlichen Beimengungen von Flugaschen). Schorr, K., Betonwerk und Fertigteil-Technik, 1983, 49(1), p.16-21, In German. Comments by G. Dingkern, Ibid., 1984, 50(11), p.786-788. 19 refs.

Dingkern, G. Concrete hardening, Chemical ice prevention, Cement admixtures, Salting, Hoarfrost.

40-984

Odeco-NKK Arctic rig rated for 200 ft depths. Offshore, Aug. 1985, 45(8), p.59.

Offshore structures, Offshore drilling, Ocean bottom, Platforms, Arctic Ocean.

40-985

Apparatus for the measurement of friction on ice and snow.

Spring, E., et al. Acta polytechnica Scandinavica. Applied physics series, 1985, No.148, 12p., 11 refs.

Pihkala, P., Leino, M.A.H. Ice friction, Metal ice friction, Wood ice friction, Wood snow friction, Metal snow friction, Measuring instruments, Skis, Sleds.

40-986

Ships navigating in ice—a selected bibliography, vol.2, 1980-1984.

Joba, J.C., Canada. Department of Transport. Technical paper, July 1985, TP 3855E, 195p.

Ice navigation, Icebreakers, Bibliographies, Ice conditions, Marine transportation, Design, Ships, Safety.

40-987

Multi-task ice data analysis system. Final report. Lowry, R., et al. Transport Canada. Technical paper, Calgary, Alta., Mar. 1985, 86p., TP 6436E, With French summary. 10 refs.

INTERA Technologies, Ltd. Sea ice distribution, Ice navigation, Remote sensing, Ice cover thickness, Design, Icebreakers, Ice conditions, Meteorological charts.

40-988

Multi-task ice data analysis system; summary report.

Lowry, R., et al. Transport Canada. Technical paper, Calgary, Alta., Aug. 1985, 15p., TP 7058E, With French summary. 3 refs. French version TP 7058F.

INTERA Technologies, Ltd. Ice navigation, Sea ice, Remote sensing, Ice cover thickness, Airborne radar, Meteorological charts.

40-989

Deicing road surfaces by ammonium nitrate. (Verfahren zum Enteisen von Verkehrsflächen mittels Ammoniumnitrat).

Rudorier, H., Austria. Österreichisches Patentamt Patentschrift, Feb. 25, 1985, No.377 281, 2p., AT 377 281, In German.

Chemical ice prevention, Road icing, Countermeasures, Trafficability.

40-990

First ship with practical de-icing system.

Volcano, J., Zosen, 1981, 26(7), p.26

Ship icing, Heat pipes, Heat transfer, Ice prevention.

## 40-991

Small waterplane area twin hulls (SWATH) vessel ice tests.

Carter, J.E., et al, Ottawa, Ontario, German & Milne Inc., July 1985, var. p., TP 6681E, With French summary. 12 refs.

Colbourne, D.B.

Ice breaking, Ice strength, Icebreakers, Ice loads, Ice models, Ships, Tests.

## 40-992

Coastal erosion and sedimentation in the Canadian Beaufort Sea.

Foibes, D.L., et al, Canada. *Geological Survey. Paper*, 1985, 85-1B, Current research, Part B, p.69-80, 30 refs., With French summary.

Frobel, D.

Coastal topographic features, Shoreline modification, Soil erosion, Sedimentation, Sediment transport, Rivers, Profiles, Photography, Beaufort Sea.

## 40-993

Permafrost growth in recently drained lakes, Western Arctic Coast.

Mackay, J.R., Canada. *Geological Survey. Paper*, 1985, 85-1B, Current research, Part B, p.177-189, 22 refs., With French summary.

Permafrost, Soil freezing, Bottom sediment, Lakes, Drainage, Thermal diffusion, Active layer, Frost heave, Soil temperature, Soil water, Sands.

## 40-994

Glacial features of the west-central Canadian Shield.

Aylsworth, J.M., et al, Canada. *Geological Survey. Paper*, 1985, 85-1B, Current research, Part B, p.375-381, 14 refs., With French summary.

Shultz, W.W.

Glacial deposits, Moraines, Landforms, Paleoclimatology, Sedimentation, Mapping, Canada.

## 40-995

Further evidence of late glacial climatic fluctuations from Newfoundland: pollen stratigraphy from a north coast site.

Macpherson, J.B., et al, Canada. *Geological Survey. Paper*, 1985, 85-1B, Current research, Part B, p.383-390, 18 refs., With French summary.

Anderson, T.W.

Glacial meteorology, Lacustrine deposits, Climatic changes, Tundra, Palynology, Paleoclimatology, Temperature variations, Pollen, Canada—Newfoundland—Notre Dame Bay.

## 40-996

Diatom dispersal phenomena: diatoms in rime frost samples from Cape Herschel, central Ellesmere Island, Northwest Territories.

Lichti-Federovich, S., Canada. *Geological Survey. Paper*, 1985, 85-1B, Current research, Part B, p.391-399, 26 refs., With French summary.

Plankton, Hoarfrost, Ice composition, Icing, Distribution, Meteorological factors, Fog, Wind factors.

## 40-997

Depressions in the bottom of Lac Mégantic, Quebec—probable stagnant ice features.

Larocque, A.C.L., Canada. *Geological Survey. Paper*, 1985, 85-1B, Current research, Part B, p.431-439, 19 refs., With French summary.

Glacial deposits, Acoustic measurement, Landforms, Lacustrine deposits, Profiles, Rheology, Sedimentation, Paleoclimatology, Glacier flow, Ground ice, Canada—Quebec—Mégantic Lake.

## 40-998

Polarstern trials off the Labrador coast—May 1984.

National Research Council, Canada. Transportation Development Centre, Canada. *Department of Transport. Report*, May 1985, TP 5932E, 110p., With French summary. 8 refs.

Ice navigation, Icebergs, Ice breaking, Ice cover effect, Ice loads, Ice conditions, Tests.

## 40-999

Product evaluation for ARMOFLEX and ARMOFORM erosion control systems.

Moses, T.L., Jr., et al, U.S. Federal Highway Administration. *Report*, Feb. 1985, AK-RD-85-32, 65p., 3 refs.

Livingston, H.

Slope protection, Shore erosion, Precast concretes, Bank protection (waterways), Countermeasures, Steels.

## 40-1000

Additional ground truth measurements—ship-in-the-ice, 1977. Field data report No.15.

LeDrew, B.R., et al, Memorial University of Newfoundland. *Centre for Cold Ocean Resources Engineering. C-Core field data report*, June 5, 1978, No.78-5, 41p., 8 refs.

Winsor, W.D.

Sea ice distribution, Ice surveys, Snow cover distribution, Pack ice, Remote sensing, Snow depth, Statistical analysis, Weather observations, Photography.

## 40-1001

Freezing of a porous medium with water supply coupled Stefan problem.

Fremond, M., et al, *Journal of mathematical analysis and applications*, June 1985, 108(2), p.371-402, 30 refs.

Ghidouche, H., Point, N.

Soil freezing, Porous materials, Stefan problem, Soil water, Saturation, Phase transformations, Mathematical models, Time factor.

## 40-1002

Relict ice-scoured erosion surface in the central North Sea.

Stoker, M.S., et al, *Marine geology*, Oct. 1984, 61(1), p.85-93, 17 refs.

Long, D.

Ice scouring, Bottom sediment, Erosion, Bottom topography, Seismic surveys, Paleoclimatology, Pleistocene, Sea ice, North Sea.

## 40-1003

Sulphate and nitrate concentrations in snow from South Greenland 1895-1978.

Neftel, A., et al, *Nature*, Apr. 18, 1985, 314(6012), p.611-613, 24 refs.

Beer, J., Oeschger, H., Zürcher, F., Finkel, R.C.

Snow composition, Impurities, Ice sheets, Ice cores, Greenland.

## 40-1004

Eustatic fluctuations of sea level and their prediction.

Dziuba, A.V., et al, *Soviet meteorology and hydrology*, 1984, No.7, p.44-49, Translated from *Meteorologiya i gidrologiya*. 25 refs.

Dobrovolski, S.G., Klige, R.K.

Sea level, Ice sheets, Melting, Atmospheric composition, Water balance, Antarctica, Greenland.

Modern eustatic fluctuations of sea level and multiyear variations of the constituents of the global water balance are examined. The possible mechanisms of anthropogenic variations of sea level in the future are discussed. An assumption is made concerning atmospheric supply of the Antarctic ice sheet as a major factor of eustatic variations in sea level in the past several decades. Variants of simple statistical prediction of eustatic fluctuations of sea level are presented.

## 40-1005

Geomorphic impact of snowmelt on slope erosion and sediment production.

Strömquist, L., *Zeitschrift für geomorphologie*, June 1985, 29(2), p.129-138, In English with French and German summaries. 12 refs.

Slope processes, Erosion, Snow melting, Sediments.

## 40-1006

Permafrost and periglacial indicators on the Tibetan Plateau from the Himalaya Mountains in the south to the Quilian Shan in the north (28-40N).

Kuhle, M., *Zeitschrift für Geomorphologie*, June 1985, 29(2), p.183-192, In English with French and German summaries. 23 refs.

Permafrost indicators, Periglacial processes, Patterned ground, Pingos, Solifluction, Tibet.

## 40-1007

Recession of cutting slope made of loosely consolidated Quaternary deposits due to freeze-thaw action.

Mackado, A., et al, *Zeitschrift für Geomorphologie*, June 1985, 29(2), p.213-222, In English with French and German summaries. 8 refs.

Matsukura, Y.

Slope processes, Erosion, Freeze thaw cycles, Frost penetration.

## 40-1008

Dynamics of undulating ice flow.

Sheehy, D., Melbourne, Australia, University of Melbourne, 1981, 253p., Refs. p.186-192.

Ice sheets, Ice creep, Ice mechanics, Ice cover thickness, Ice models, Antarctica—Casey Station, Antarctica—Law Dome.

Mathematical models that describe the flow of ice over bedrock perturbations have been further developed to simulate more adequately the natural situation. The biharmonic equation for the stream function was solved for a multi-layered section of flowing ice with each layer having its own viscosity. After an evaluation of its behavior, the model was adjusted to fit the measured data from a detailed survey of a region of undulating ice flow along an antarctic flowline. Inferences were then

drawn on the characteristics of the flowing ice within the ice thickness and at the bedrock. Other regions that were studied in less detail, and mathematical models from the literature were also considered. Included are chapters for a literature review, on measurements of ice mechanical properties used in developing the model, on presenting data and evaluating the models, and for discussing results and conclusions. Measurements were made of the ice sheet 600-1000 km inland from Casey Station. (Auth. mod.)

## 40-1009

Thermal convection in snow.

Powers, D.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1985, CR 85-09, 61p., ADA-157 577, Refs. p.46-48.

Colbeck, S.C., O'Neill, K.

Snow thermal properties, Snow heat flux, Heat transfer, Water vapor, Temperature gradients, Porous materials, Thermal conductivity, Convection, Mathematical models, Latent heat, Experimentation, Metamorphism (snow).

Large temperature gradients applied to a snow cover drive water vapor upwards and result in rapid recrystallization of snow crystals. The same temperature gradients create gradients of air density that can cause flows of air through the snow cover. The formalism necessary to describe these flows is developed here in an effort to include the convection of vapor in the understanding of snow metamorphism. The theory of convection through porous media is extended to include the transport of water vapor, which is important because of its latent heat. Results are presented in terms of a Lewis number, defined as the ratio of thermal to mass diffusivities. For Lewis numbers greater than 1.0, phase change intensifies convection, and for Lewis numbers less than 1.0, phase change retards convection. Two boundary conditions of special interest in the study of snow, a constant heat flux bottom and a permeable top, are investigated.

## 40-1010

Analysis of the Revere, Quincy and Stamford structure data bases for predicting building material distribution.

Merry, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1985, SR 85-07, 35p., ADA-157 458, 8 refs.

LaPotin, P.J.

Construction materials, Precipitation (meteorology), Chemical properties, Buildings, Rain, Forecasting.

Data bases on buildings in Revere and Quincy, Massachusetts, and Stamford, Connecticut, were studied to determine if a measure of building material distribution could be calculated for a city using land use, census tract and the Corps' data on buildings. Statistical measures of chi-square, asymmetric lambda, uncertainty coefficient, F ordinate, as well as the correlation coefficient-squared and eta-squared statistics were calculated for the three data bases. The Corps definition of building type was found to be the best predictor of the building surface area. However, all indicators (including building type) explained only low percentages of the variability in the dependent variable (building surface area). These results indicate that other variables are required to explain the variability of building surface area adequately.

## 40-1011

Study of glacial morphology and the history of glaciers in the Flüelapass region (Canton Grisons, Switzerland). (Glazialmorphologische und gletschergeologische Untersuchungen im Gebiet Flüelapass (Kt. Graubünden, Schweiz)).

Vuagneux, R., Zurich, W. Schneider, 1983, 249., Ph.D. thesis. In German. Refs. p.232-244.

Glaciology, Glacier surveys, Geomorphology, Glacial deposits, Moraines, Geology, Tectonics, History, Switzerland—Grisons.

## 40-1012

Ice jam flood prevention measures: Lamoille River at Hardwick, Vermont, USA.

Calkins, D.J., MP 1940, International Conference on the Hydraulics of Floods and Flood control, 2nd, Cambridge, England, Sep. 24-26, 1985. Proceedings, Cranfield, Bedford, England, BHRA, The Fluid Engineering Centre, 1985, p.149-168, 4 refs.

Ice control, Ice jams, River ice, Floods, Water level, Topographic effects, Countermeasures.

Prevention of ice-induced flooding is very difficult, but the impact can be minimized if the winter ice regime can be altered. The Lamoille River at Hardwick, Vermont, is a steep, shallow stream during non-ice periods. Under ice jam conditions stage increases of 1-2 m above the elevation of the floodplain have been measured. Several experimental measures have been implemented to minimize the ice jam flood levels, their performance was evaluated for the winter of 1983-84.

40-1013

Use of synthetic non-woven materials in the construction of roads on weak ground. A review. (Primenenie sinteticheskikh materialov pri stroitel'stve avtomobil'nykh dorog na slabyykh gruntakh). Polunovskii, A.G., et al. Vsesoiuznyi proektno-tekhnologicheskii institut transportnogo stroitel'stva. Obzornaya informatsiya. Moscow, 1979, 47p., In Russian with abridged English table of contents enclosed. 19 refs.

Brantman, B.P.

Swamps, Roadbeds, Embankments, Frost protection, Frost penetration, Frost heave, Thermal insulation, Reinforced fabrics.

40-1014

Use of synthetic fabrics in transportation construction. A review. (Primenenie sinteticheskikh tekstil'nykh materialov v transportnom stroitel'stve). Polunovskii, A.G., et al. Vsesoiuznyi proektno-tekhnologicheskii institut transportnogo stroitel'stva. Obzornaya informatsiya. 1981, No.1, 44p., In Russian with English table of contents enclosed. 54 refs.

Roadbeds, Embankments, Swamps, Foundations, Sands, Peat, Thermal insulation, Frost penetration, Frost heave, Frost prevention.

40-1015

Cryolithologic zonation of the West Siberian plate. (Kriolitologicheskoe zonirovaniye Zapadno-Sibirskoi plity).

Trofimov, V.T., et al. *Inzhenernaya geologiya*, Sep.-Oct. 1985, No.5, p.20-28, In Russian. 15 refs. Vasil'chuk, I.U.K.

Maps, Permafrost distribution, Subsea permafrost, Continuous permafrost, Sporadic permafrost, Discontinuous permafrost.

40-1016

Changes in cryological conditions of built-up areas in northern West Siberia (the Nyda River basin). (Izmeneniya merzlotnykh uslovii na zastroyennykh territoriyakh v usloviyakh severa Zapadnoi Sibiri (na primere bassaina r. Nydy)).

Shatalova, T.I.U., *Inzhenernaya geologiya*, Sep.-Oct. 1985, No.5, p.90-98, In Russian. 2 refs.

Urban planning, Continuous permafrost, Permafrost beneath structures, Permafrost transformation, Buildings, Foundations, Heat transfer, Vegetation factors, Permafrost depth, Charts.

40-1017

Ice in Quaternary deposits and their relation to ground waters of northeastern Europe. (Led v chetvertichnykh otlozheniyakh i ikh svyaz s podzemnymi vodami Evropeiskogo Severo-Vostoka).

Oberman, N.G., *Inzhenernaya geologiya*, Sep.-Oct. 1985, No.5, p.99-104, In Russian. 4 refs.

Frozen fines, Quaternary deposits, Ground ice, Permafrost hydrology, Soil water moisture, Frost penetration, Ice cement.

40-1018

Ice age data for climate modelling from an antarctic (Dome C) ice core.

De Angelis, M., et al. New perspectives in climate modelling. Edited by A.L. Berger and C. Nicolis. Amsterdam, Elsevier, 1984, p.23-45, Refs. p.41-45. DLC QC874.N49

Isotopes, Carbon dioxide, Paleoclimatology, Antarctica—Dome C.

This paper summarizes some of the main results of climate related parameters obtained from a 906 m deep ice core drilled at Dome C. Reviewed in particular are results on accumulation rate, temperature and relative humidity from the stable isotope composition of the ice, aerosol concentrations from the study of ice impurities, and atmospheric carbon dioxide content from air bubbles in ice. A model of the changes in the atmospheric composition and these changes can be used either as input data for Ice Age Climate models or as a check of model results.

40-1019

Frost resistant concretes with fine sands and chemical admixtures. (Morozostoikeye betony na melkikh peskakh s khimicheskimi dobavkami).

Ivanov, F.M., et al. *Beton i zhelezobeton*, Apr. 1985, No.4, p.17-18, In Russian. 5 refs.

Concrete strength, Concrete admixtures, Concrete aggregates, Sands, Frost resistance.

40-1020

Standard procedure for determining frost resistance of concrete by ultrasound. (Standart na ultrazvukovoy metod opredeleniya morozostoikeya betona). Mizrokhi, I.U.N., et al. *Beton i zhelezobeton*, Apr. 1985, No.4, p.23-24, In Russian.

Concrete strength, Concrete freezing, Frost resistance, Frost penetration, Freeze thaw cycles, Tests.

40-1021

Frost resistance of bending concrete elements containing slag-portland cement. (Morozostoikeye izgibaemykh elementov iz betona na shlakoportlandtsemente).

Sosipatrova, N.I., et al. *Beton i zhelezobeton*, May 1985, No.5, p.43-45, In Russian. 4 refs.

Concrete structures, Prefabrication, Concrete strength, Frost resistance, Low temperature tests.

40-1022

Excavation of deep mine shafts in polar regions. (Prokhodka glubokikh stvolov v usloviyakh Zapol'ar'ia).

Volkodav, L.N., *Bezopasnost' truda v promyshlennosti*, July 1985, No.7, p.30-32, In Russian.

Mine shafts, Excavation, Permafrost physics, Frozen rock strength, Ventilation.

40-1023

Present state and the ways of decreasing electricity-related accidents at the Noril'sk Mining and Metallurgical Combine. (Sostoyaniye i puti snizheniya elektrotравmatizma na Noril'skom gorno-metallurgicheskoy kombinatye).

Men'shov, R.G., et al. *Bezopasnost' truda v promyshlennosti*, July 1985, No.7, p.38-39, In Russian.

Electrical grounding, Mining, Permafrost.

40-1024

Safe electrical blasting techniques used in quarries of the Far North. (Bezopasnost' elektrovzryvaniya na kar'erakh Kralnego Severa).

Berezinets, M.I., et al. *Bezopasnost' truda v promyshlennosti*, Mar. 1985, No.3, p.38-39, In Russian.

Peat, Quarries, Blasting, Boreholes, Equipment, Permafrost, Swamps.

40-1025

New building code for methods of determining the resistance of enclosures to heat transfer. (Novyi standart na metody opredeleniya soprotivleniya teploperedache ogradhdayushchikh konstruksiy).

Kozhevnikov, I.G., et al. *Biulleten' stroitel'noy tekhniki*, June 1985, No.6, p.16-18, In Russian.

Lifanov, I.S.

Walls, Heat transfer, Building codes, Design.

40-1026

Construction norms and specifications 2.05.06-85 "Main Pipelines". (O SNiP 2.05.06-85 "Magistral'nye truboprovody").

Sessin, I.V., *Biulleten' stroitel'noy tekhniki*, July 1985, No.7, p.12-13, In Russian.

Petroleum transportation, Pipelines, Gas pipelines, Liquefied gases, Building codes, Standards, Permafrost beneath structures.

40-1027

Framework for sports buildings on permafrost. (Sportivnye korpusa na vechnoi merzlotey).

Mezentseva, N., *Arkhitektura SSSR*, May-June 1985, No.3, p.34-37, In Russian.

Buildings, Permafrost beneath structures, Construction materials.

40-1028

Effect of distribution of snow and ice on streamflow. Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. *Norwegian National Committee for Hydrology Report*, 1983.

No.22, 21p., Refs. passing. For individual papers see 40-1029 through 40-1043.

Tvede, A.M., ed.

Glacial hydrology, Snow hydrology, Stream flow, Runoff forecasting, Snow cover distribution, Snow water equivalent, Snow accumulation, Meetings, Meltwater, Topographic effects, Remote sensing, Climatic factors.

40-1029

On the areal distribution of the water equivalent of snow cover in Finland.

Kuusisto, E., *Norwegian National Committee for Hydrology Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.9-19, 6 refs.

Snow water equivalent, Snow cover distribution, Snowmelt, Snow accumulation, Forest canopy, Models, Seasonal variations, Finland.

40-1030

Determination of snow distribution in high arctic basins.

Woo, M.-K., *Norwegian National Committee for Hydrology Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.21-31, 11 refs.

Snow accumulation, Snow cover distribution, Snowfall, Snowmelt, Snow surveys, Snowdrifts, Topographic effects, Snow depth, Snow density, Canada.

40-1031

Some actual problems within snow hydrology in Czechoslovakia.

Babiakova, G., *Norwegian National Committee for Hydrology Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.33-47, 20 refs.

Snow hydrology, Snow accumulation, Snow cover distribution, Snow water content, Topographic effects, Models, Snow melting, Czechoslovakia.

40-1032

Snow mapping in the Tasersuaq basin, West Greenland, based on satellite data and field measurements.

Sogaard, H., *Norwegian National Committee for Hydrology Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.49-62, 6 refs.

Snow cover distribution, Snow water equivalent, Remote sensing, Runoff, Snow cover structure, Models, Drainage, Mapping, Snow depth, Snow density, Altitude, Greenland—Tasersuaq.

40-1033

Snow measurement system in the catchment area of the river Orkla, Norway.

Sand, K., *Norwegian National Committee for Hydrology Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.63-73.

Snow hydrology, Snow water equivalent, Runoff forecasting, Snow cover distribution, Mountains, Snow depth, Electric power, Norway—Orkla River.

40-1034

Snow assessment and snow distribution in a glacier-free drainage basin at 62°N in Sweden.

Zakrisson, K.A., *Norwegian National Committee for Hydrology Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.75-81, 5 refs.

Snow cover distribution, Snow accumulation, Snow water equivalent, Runoff, Meltwater, Snowmelt, Topographic effects, Mountains, Seasonal variations, Maps, Snow density, Sweden.

40-1035

Modelling the melting of snow and ice.

Lundquist, D., *Norwegian National Committee for Hydrology Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.83-89, 8 refs.

Snow melting, Glacier melting, Heat balance, Snow water content, Degree days, Ice melting, Air temperature, Models.

40-1036

Digital topography of Isdalen Basin (North-Norway) as tool for investigations of snow distributions and radiation balance.

Stuve, P., *Norwegian National Committee for Hydrology Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.91-101, 6 refs.

Snow hydrology, Snow cover distribution, Radiation balance, Snowmelt, Runoff, Snow water equivalent, Topographic effects, Mountains, Meteorological factors, Solar radiation, Altitude, Norway—Isdalen.

## 40-1037

Effects of valley snowpacks upon the breakup of streams in the High Arctic.

Woo, M.-K., *Norwegian National Committee for Hydrology. Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.103-116, 12 refs.

Snow cover distribution, Runoff, Ice breakup, Snowdrifts, Snow density, Snow hardness, Stream flow, Valleys, Floods, Snowmelt, Snow jams.

## 40-1038

Snow accumulation, snow measurements: their effects in small Arctic catchments.

Wedel, J.H., *Norwegian National Committee for Hydrology. Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.117-129, 9 refs.

Snow accumulation, River ice, Runoff, Hydrology, Snowfall, Gas pipelines, Dams, Canada.

## 40-1039

Effects of snowmelt runoff and the removal of forest cover.

Dickinson, R.B.B., et al, *Norwegian National Committee for Hydrology. Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.131-150, 13 refs.

Runoff, Snowmelt, Forest canopy, Snow water equivalent, Watersheds, Precipitation (meteorology), Statistical analysis, Stream flow.

## 40-1040

Effects of vegetation on snow distribution and runoff—an Alaskan experience.

Santeford, H., *Norwegian National Committee for Hydrology. Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.151-162, 9 refs.

Snow cover distribution, Vegetation factors, Runoff, Slope orientation, Snow water equivalent, Forest land, Temperature gradients, Soil water migration, Snowmelt, United States—Alaska.

## 40-1041

Initiation of river ice breakup.

Beltaos, S., *Norwegian National Committee for Hydrology. Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.163-177, 8 refs.

Ice breakup, River ice, Freezep, Ice cover thickness, Models.

## 40-1042

Influence of glaciers on the variability of long runoff series.

Tvede, A.M., *Norwegian National Committee for Hydrology. Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.179-189, 6 refs.

Glacial hydrology, Runoff, Variations, Volume, Norway.

## 40-1043

Recent glaciological work in Greenland in connection with development of hydropower.

Braithwaite, R., *Norwegian National Committee for Hydrology. Report*, 1983, No.12, Northern Research Basin Symposium Workshop, 4th, Ullensvang, Norway, Mar. 22-25, 1982. Proceedings. Edited by A.M. Tvede. Effect of distribution of snow and ice on streamflow, p.191-199, 18 refs.

Glacial hydrology, Stream flow, Runoff, Glacier ablation, Glacier mass balance, Electric power, Climatic factors, Models, Greenland.

## 40-1044

Esker characteristics in terms of glacier physics, Katahdin esker system, Maine.

Shreve, R.L., *Geological Society of America. Bulletin*, May 1985, 96(5), p.639-646, 20 refs.

Periglacial processes, Ground ice, Ground water, United States—Maine.

## 40-1045

Atmospheric boundary layer structure and drag coefficients over sea ice.

Overland, J.E., *Journal of geophysical research*, Sep. 20, 1985, 90(C5), p.9029-9049, 92 refs.

Air temperature, Surface roughness, Sea ice, Wind velocity, Boundary layer, Temperature inversions.

## 40-1046

Coupled ice-ocean model of a wind-driven coastal flow.

Ikeda, M., *Journal of geophysical research*, Sep. 20, 1985, 90(C5), p.9119-9128, 19 refs.

Sea ice, Ice shelves, Wind velocity, Shores, Ice water interface, Models.

## 40-1047

Warm water cells in the North Water, northern Baffin Bay during winter.

Steffen, K., *Journal of geophysical research*, Sep. 20, 1985, 90(C5), p.9129-9136, 25 refs.

Sea ice, Water temperature, Polynyas, Baffin Bay.

## 40-1048

Carbon tetrachloride, and tetrachloroethylene, 1,1,1-trichloroethane and bromoform in Arctic sea water.

Fogelqvist, E., *Journal of geophysical research*, Sep. 20, 1985, 90(C5), p.9181-9193, 46 refs.

Sea water, Chemical composition, Pollution, Norway—Svalbard.

## 40-1049

Measurements of total alkalinity, calcium, and sulfate in natural sea ice.

Anderson, L.G., et al, *Journal of geophysical research*, Sep. 20, 1985, 90(C5), p.9194-9198, 24 refs.

Sea ice, Ice composition, Ice cores, Chemical analysis.

## 40-1050

Analysis of river wave types.

Ferrick, M.G., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1985, CR 85-12, 17p., ADA-158 683, For another source see 39-3098. 20 refs.

Water waves, River flow, River ice, Dams, Unsteady flow, Ice jams, Runoff, Friction, Mathematical models.

In this paper, we consider long-period, shallow-water river waves that are a consequence of unsteady flow. River waves result from hydroelectric power generation or flow control at a dam, the breach of a dam, the formation or release of an ice jam, and rainfall/runoff processes. The Saint-Venant equations are generally used to describe river waves. Dynamic, gravity, diffusion, and kinematic river waves have been defined, each corresponding to different forms of the momentum equation and each applying to some subset of the overall range of river hydraulic properties and time scales of wave motion. However, the parameter ranges corresponding to each wave description are not well defined, and the transitions between wave types have not been explored. This paper is an investigation into these areas, which are fundamental to river wave modeling. The analysis is based on the concept that river wave behavior is determined by the balance between friction and inertia.

## 40-1051

U.S. permafrost delegation visit to the People's Republic of China, 15-31 July 1984.

Brown, J., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1985, SR 85-09, 137p., ADA-158 535, 19 refs.

Permafrost beneath structures, Permafrost thermal properties, Permafrost distribution, Frozen ground mechanics, Organizations, Engineering, Freeze thaw cycles, Damage, Geocryology, China.

A U.S. delegation of 15 scientists and engineers representing federal and state agencies, industry, and universities specializing in problems of seasonally and perennially frozen ground visited China during the period 15-31 July, 1984. The trip was organized by the Ministry of Railways and was co-hosted by the Academia Sinica's Institute of Glaciology and Cryopedology in Lanzhou. The 16-day visit was in return for a U.S.-hosted visit of a Chinese delegation to Alaska and the West Coast in July 1983 as part of the Fourth International Conference on Permafrost. The U.S. Committee on Permafrost of the National Research Council organized the U.S. participation. The facilities visited are described and technical information obtained is discussed.

## 40-1052

Permafrost, seasonally frozen ground, snow cover and vegetation in the USSR.

Bigl, S.R., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1984, SR 84-36, 128p., ADA-153 628, Refs. p.26-31.

Permafrost distribution, Active layer, Snow cover, Vegetation, Permafrost thermal properties, Permafrost depth, Ground ice, Seasonal variations, USSR.

A survey of the Cold Regions Science and Technology Bibliography and other references in the CRREL library was conducted to compile recent information about several Soviet physiogeographic features: permafrost, seasonally frozen ground,

snow cover and vegetation. The products of the study are 1) a series of maps presenting the general distribution of these features over the entire Soviet Union and 2) a collection of 57 maps showing the local distribution of ground ice and permafrost.

## 40-1053

Soviet glaciology in the Second World War. [Sovetskaya glatsiologiya v Velikoi Otechestvennoi Voiny]. Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No.52, p.4-12, In Russian with English summary. 82 refs.

## Samolov, R.S.

Military operation, Military transportation, Logistics, Military equipment, Cold weather operation, Winter maintenance, Military engineering, Snow roads, Ice roads, Sea ice distribution, Icebound lakes, Ice crossings.

## 40-1054

Sixth international symposium on ice held in Hamburg. [Na shestom mezhdunarodnom simpoziume po l'du v Gamburgke].

Zotikov, I.A., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No.52, p.18-23, In Russian.

Ports, Ice islands, Ice cover strength, Ice navigation, Artificial islands, Ice cover thickness, Meetings, Ice control, Sea ice distribution.

Among other topics discussed at the symposium, this note describes operational experiences with the icebreaker *Polarstern*. The icebreaker was designed and equipped for Antarctic research including procurement, transportation and maintenance of the Georg von Neumayer Station. It carries 4000 tons of cargo, including fuel and all-terrain vehicles for year-round activities of the polar station, and other equipment for drilling, core sampling, seismic soundings and low temperature research. Study facilities consist of 9 main laboratories and 12 additional container-type laboratories, that can be mounted on the deck. Testing results and technical data revealed its ability of cutting ice 1.5 m thick in continuous motion and 3 m thick in ramming-mode operation.

## 40-1055

All-Union conference on the problem of using snow and ice in the national economy. [Vsesoiuznoe soveshchaniye po problemam ispol'zovaniia l'da i snega v narodnom khoziaistve].

Alekseev, V.R., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No.52, p.23-30, In Russian.

Ice (construction material), Ice crossings, Ice roads, Snow roads, Meetings, Hydraulic structures, Ice formation.

## 40-1056

Role of moraines in the thermal physics of mountain glaciers. [Rol' morennogo chekhla v teplofizike gorn'nykh lednikov].

Bozhinskii, A.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No.52, p.31-46, In Russian with English summary. 30 refs.

Krass, M.S., Popovnin, V.V.

Glacial erosion, Glacier ice, Glacier ablation, Moraines, Artificial thawing.

## 40-1057

First experience in airborne radio-echo sounding of mountain glaciers in Kazakhstan. [Pervyi opyt veroradiozondirovaniia gorn'nykh lednikov Kazakhstana].

Bobrova, L.I., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No.52, p.46-54, In Russian with English summary. 13 refs.

Mountain glaciers, Glacier ice, Radio soundings, Airborne equipment, Seismicity, Drilling.

## 40-1058

Ice structure and ice formation on a subpolar glacier. [Struktura l'da i doobrazovanie na subpoliarnom lednike].

Samolov, O.IU., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No.52, p.54-61, In Russian with English summary. 19 refs.

Zagorodnov, V.S.

Mountain glaciers, Glacier formation, Glacier alimentation, Glacier ice, Ice structure.

## 40-1059

Sea ice and icebergs of the southern ocean. [Morskice l'dy i aisbergi Južnogo okeana].

Romanov, A.A., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No.52, p.61-67, In Russian with English summary. 15 refs.

Pack ice, Ice edge, Sea ice distribution, Icebergs, Drift, Ice volume.

Sea ice observations in the southern ocean during 1956-82 are presented, summarized, interpreted and the regularities of ice distribution, development and decay are discussed. Space-time variations in the distribution area, the volume of drift ice, location of polynyas, fast ice and ice edge are described and the basic ice-balance components estimated.

## 40-1060

**Significance of glaciated regions of the Soviet Arctic for indications and evaluations of the state of natural background.** (Znachenie lednikovyykh regionov sovetskoy Arktiki dlia indikatsii i otsenki fonovogo sostoiianiia prirodnoi sredy). Govorukha, L.S., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 67-72, In Russian with English summary. 11 refs.

**Deserts, Ecosystems, Tundra, Vegetation, Arctic regions, Snow cover effect, Glaciation, Plant ecology, Meteorological factors.**

## 40-1061

**Changes of Caucasus glaciers during the "Little Ice Age" and the 20th century.** (Izmeneniia lednikov Kavkaza za "Malyĭ lednikovyi period" i XX vek). Golodkovskaya, N.A., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 72-81, In Russian with English summary. 23 refs.

**Lichens, Moraines, Alpine glaciation, Glacier ice, Glacier surges, Ice volume, Age determination, Glacier oscillation.**

## 40-1062

**Space-time variations of mudflow phenomena in the western Pamirs.** (Prostranstvenno-vremennaya izmenchivost' selevykh iavlenii na Zapadnom Pamire). Tukeev, O.V., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 81-86, In Russian with English summary. 7 refs.

**Alpine landscapes, Slope processes, Mudflows, Classifications.**

## 40-1063

**Dynamics of stationary ice covers under different boundary conditions.** (Dinamika statsionarnykh lednikovyykh pokrovov pri raznykh granichnykh usloviakh).

Larina, T.B., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 87-92, In Russian with English summary. 4 refs.

**Glacier ice, Ice mechanics, Flow rate, Glacier beds, Mathematical models.**

## 40-1064

**Thermodynamic models of climatic systems glaciers-ocean-atmosphere.** (Termogidrodinamicheskaia model' klimaticheskoi sistemy ledniki-okean-atmosfera).

Verbitskii, M.E., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 92-98, In Russian with English summary. 17 refs.

**Models, Climatology, Ocean environments, Air water interactions, Meteorological factors, Glaciation, Heat transfer, Analysis (mathematics).**

## 40-1065

**Formulation and solution of the problem of the reconstruction of glacier beds from surface profiles.** (Postanovka i issledovanie zadachi o vosstanovlenii lozha lednika po profilu ego poverkhnosti). Salamatin, A.N., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 99-104, In Russian with English summary. 7 refs.

**Glacier ice, Glacier beds, Ice surface, Profiles, Bottom topography, Analysis (mathematics).**

## 40-1066

**Phenomenon of internal heating of "cold" glaciers and the formation of transitional type glaciers.** (Izmenenie vnutrennego razogreva "kholodnykh" lednikov i obrazovanie lednikov perekhodnogo tipa). Grigor'ian, S.S., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 105-110, In Russian with English summary. 18 refs.

**Bozhinskii, A.N., Krass, M.S., Macheret, I.U. Mountain glaciers, Glacier ice, Ice temperature, Seasonal variations, Ice physics, Ice thermal properties, Geothermy, Heat transfer, Norway—Svalbard.**

**Ability of cascade transfer of energy in a glacier.** (Sposobnost' kaskadnogo perenosu energii v lednike).

Kazanskiĭ, A.B., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 110-115, In Russian with English summary. 9 refs.

**Glacier ice, Glacier oscillation, Ice thermal properties, Heat transfer, Glacier flow, Analysis (mathematics).**

## 40-1068

**Problems of climatic reconstruction of glacial epochs.** (Problemy rekonstruktsii klimata lednikovyykh epoch).

Velichko, A.A., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 120-130, In Russian with English table of contents enclosed. 14 refs.

**Permafrost origin, Permafrost distribution, Paleoclimatology, Charts, Air temperature, Atmospheric circulation.**

## 40-1069

**Climate effects of the Late Pleistocene glacier surges (the cooling of 10.5 thousand years ago taken as an example).** (Klimaticheskie efekty pozdnelednikovyykh serdzhel (na primere pokholodaniia 10.5 tys. let nazad)).

Grosval'd, M.G., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 134-140, In Russian with English summary. 19 refs.

**Glacier surges, Ice sheets, Mountain glaciers, Icebergs, Water temperature, Climatology, Cooling, Atlantic Ocean.**

## 40-1070

**Interaction of ice covers and the ocean in the continental margin zones.** (Vzaimodelstvie lednikovyykh pokrovov i okeana v zone materikovyykh okrain). Glazovskii, A.F., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 140-146, In Russian with English summary. 22 refs.

**Coastal topographic features, Fjords, Mountain glaciers, Ice sheets, Ice erosion, Ocean bottom, Bottom topography.**

## 40-1071

**Reflection of climatic conditions in the structure of moraines and alluvium over the territory of the ancient continental ice sheet.** (Otrazhenie klimaticheskikh uslovii v stroenii morei i alluvii na territorii drevnego materikovogo oledeniia).

Gaigalas, A.I., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 146-150, In Russian with English summary. 6 refs.

**Glacial deposits, Glacial hydrology, Glacial rivers, Alluvium, Moraines, Cryogenic structures.**

## 40-1072

**Computation of the distribution of the annual ratio of solid precipitation over Central Asia.** (Raspreделение godovoi doli tverdykh osadkov po territorii Srednei Azii i ikh raschet). Arkhipova, O.M., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 177-183, In Russian with English summary. 13 refs.

**Glacial rivers, Snow cover distribution, Snow depth, Runoff, Alpine landscapes, Snow water equivalent.**

## 40-1073

**Paleoglaciological reconstruction of East Antarctica in the World Atlas of Snow and Ice Resources.** (Paleoglatsiologicheskie rekonstruktsii Vostochnoi Antarkidy v Atlase snezhno-ledovykh resursov mira). Bardin, V.I., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 183-189, In Russian with English summary. 32 refs.

**Ice sheets, Glacier flow, Ice volume, Ice erosion, Mapping, Moraines, Glacier oscillation.**

Compilation of the World Atlas of Snow and Ice Resources stimulated the collection, analysis and synthesis of glaciological data, resulting in new maps of modern outlook on the Earth's glaciophere, in particular the paleoglaciological reconstruction of Antarctica. Studies were based on the fossilized fauna and flora, obtained in core drilling on land and sea bottom, icebergs, sediments and ancient moraines, mostly restricted to coastal zones, except the recent drilling data in the Antarctic

oases and the bottom of the southern ocean. On the basis of observations in Queen Maud Land, Prince Charles Mountains and other areas of East Antarctica a schematic paleoglaciological map is drawn showing different development stages in the ice sheet and the reconstruction of its dimensions.

## 40-1074

**River and snowmelt runoff from the Transcaucasian highlands and the Lenkoran lowland.** (Rechnoi i snegovoi stok Zakavkazskogo Nagor'ia i Lenkoranskoĭ nizmennosti). Vladimirov, L.A., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 195-198, In Russian. 4 refs.

**Dzhavakhishvili, A.I., Zakarashvili, N.N. Meltwater, Snow cover distribution, Runoff, Snowmelt, Mapping, Mountains, Snow water equivalent, Charts, River flow, Drainage.**

## 40-1075

**Glaciation characteristics in the explored antarctic oasis areas.** (Kharakternye cherty dglatsiatsii osvvaemoi territorii antarkticheskogo oazisa). Klovov, V.D., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 198-202, In Russian with English summary. 2 refs.

**Alekhin, A.N.**

**Buildings, Pollution, Ice sheets, Microclimatology, Snow cover distribution, Ice melting, Hydrocarbons, Wind factors, Economic development, Environmental protection, Environmental impact, Antarctica.**

Aerial reconnaissance, photography and route surveys indicate the shrinking of nival landscape elements in the antarctic oasis areas, induced by natural factors and human activities, such as melting due to hydrocarbon contamination of snow and snow accumulation in the wind shadow of the station buildings and structures.

## 40-1076

**Stratification of ice core from the Vestfonna, North-Eastern Land.** (Stratifikatsiia lednikovogo kerna s zapadnogo ledianogo polia na Severo-Vostochnoi Zemle).

Punning, I.A.-M.K., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 202-205, In Russian with English summary. 13 refs.

**Glacier ice, Drill core analysis, Ice accretion, Seasonal variations, Norway—Spitsbergen.**

## 40-1077

**Chemical composition of ice cover in North-Eastern Land.** (Khimicheskom sostave lednikovogo pokrova na Vostochnoi Zemle). Gvozdev, A.I., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 205-209, In Russian with English summary. 8 refs.

**Glacier ice, Drill core analysis, Ice composition, Human factors, Volcanic ash, Norway—Spitsbergen.**

## 40-1078

**Studies of underground ice of the "Ledyanaya Gora" cross-section in the Yenisey River valley by the oxygen-isotope method.** (Izuchenie plastovykh zalezhei podzemnogo l'da iz razreza "Ledianaya gora" v doline r. Enisei izotopno-kislородnym metodom). Val'miae, R.A., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 209-214, In Russian with English summary. 25 refs.

**Ground ice, Ice cores, Isotope analysis, Ice composition, Oxygen isotopes, Permafrost structure.**

## 40-1079

**Ice evaporation intensity in underground cavities.** (Intensivnost' isparenii l'da v podzemnykh polos-tiakh). Mavliudov, B.R., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 214-217, In Russian with English summary. 10 refs.

**Caves, Icing, Ice sublimation, Wind factors, Thermal effects.**

## 40-1080

**Snow cover trafficability.** (O probleme prokhodimosti snezhnogo pokrova). Samoilov, R.S., et al., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovaniĭ*, 1985, No. 52, p. 219-224, In Russian with English summary. 23 refs.

**Ushakov, A.I., Khodakov, V.G., Ternovskii, B.I. Snow cover stability, Snow depth, Snow cover structure, Trafficability, Landscape types, Air cushion vehicles, Tracked vehicles, Vehicle wheels.**

- 40-1081**  
Interactions between glacio-nival systems and roads as an object of investigation in engineering glaciology. (Vzaimodelstvie nival'no-gliatsial'not sistem i dorogi—ob'ekt issledovaniia inzhenernoi gliatsiologii, Osokin, N.I., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanih*, 1985, No.52, p.224-227, In Russian with English summary. 11 refs.  
Snow cover structure, Trafficability, Ice roads, Snow roads, Naleds, Railroads, Models.
- 40-1082**  
Snow melloriation in the USSR. (Snezhnaia melioratsiia v SSSR), Somova, V.I., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanih*, 1985, No.52, p.228-233, In Russian with English summary. 21 refs.  
Shul'gin, A.M.  
Soil stabilization, Soil erosion, Snow cover effect, Snow water equivalent, Snow depth, Agriculture.
- 40-1083**  
Some aspects of using the spray-cone ice formation method. (Nekotorye aspekty primeneniia metoda falk'nogo l'doobrazovaniia), Sosnovskii, A.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanih*, 1985, No.52, p.233-237, In Russian with English summary. 3 refs.  
Ice growth, Ice accretion, Artificial ice, Firn.
- 40-1084**  
Experience in preventing naled formation on mountain roads of Kirgizia. (Opyt bor'by s nalediam na gorykh dorogakh Kirgizii), Turgunbaev, A.T., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanih*, 1985, No.52, p.237-240, In Russian with English summary. 4 refs.  
Roads, Naleds, Glaze, Countermeasures, Alpine landscapes, Drainage, Ice prevention.
- 40-1085**  
Correlation technique of estimating ice reserves in glaciers. (Korrelatsionnyi metod otsenki zapasov l'da v lednikakh), Zhuravlev, A.B., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanih*, 1985, No.52, p.241-249, In Russian with English summary. 73 refs.  
Glacier ice, Ice volume, Glacier thickness, Seismic surveys, Mountain glaciers, Ice (water storage).
- 40-1086**  
Problems with rapid infiltration—a post mortem analysis. Reed, S.C., et al, MP 1944, [1984], 17p. + figs., Presented at 57th Annual Conference of the Water Pollution Control Federation, New Orleans, LA, Oct. 1-4, 1984. Unpublished manuscript. 7 refs.  
Crites, R.W., Wallace, A.T.  
Water treatment, Waste treatment, Seepage, Ground water, Design, Cost analysis.  
Rapid infiltration is a reliable and cost effective technique for wastewater treatment. Over 300 municipal systems are in successful use in the United States. A few of the recently constructed systems have not satisfied all design expectations, particularly with respect to the amount of wastewater that can infiltrate within the time allowed. Correction of these problems often requires additional construction and increases costs but the cumulative effect is also to raise general concerns within the profession regarding the suitability and applicability of the basic concept. An analysis of the failures, and some of the problem systems was conducted and this paper will describe the results.
- 40-1087**  
Wetlands for wastewater treatment in cold climates. Reed, S.C., et al, MP 1945, [1984], 9p. + figs., Presented at Water Reuse Symposium, 3rd, San Diego, CA, Aug. 26-31, 1984. Unpublished manuscript. 13 refs.  
Bastian, R., Black, S., Khetry, R.  
Waste treatment, Water treatment, Cold weather performance, Water level, Ground water, Vegetation factors, Saturation.
- 40-1088**  
Design, operation and maintenance of land application systems for low cost wastewater treatment. Reed, S.C., MP 1946, [1983], 26p. + figs., Presented at Workshop on Low Cost Wastewater Treatment, Clemson, SC, Apr. 19-21, 1983. Unpublished manuscript. 3 refs.  
Waste treatment, Water treatment, Seepage, Vegetation factors, Design criteria, Land reclamation, Saturation, Facilities.
- 40-1089**  
Nitrogen removal in wastewater stabilization ponds. Reed, S.C., MP 1943, [1983], 13p. + figs., Presented at 56th Annual Conference of the Water Pollution Control Federation, Atlanta, Georgia, Oct. 2-7, 1983. Unpublished manuscript. 14 refs.  
Waste treatment, Water treatment, Water pollution, Ponds, Countermeasures, Design criteria, Land reclamation, Chemical analysis.  
A rational procedure for estimating nitrogen removal in facultative wastewater stabilization ponds has been developed and validated. The procedure, based on first order plug flow kinetics is dependent on pH, temperature and residence time. The model was developed from extensive data obtained at four facultative ponds in various parts of the U.S. and was validated with independent data from five pond systems in the U.S. and Canada. The procedure should be useful whenever system design criteria require nitrogen removal or nitrification. It should be particularly helpful for the pond component of land treatment systems when nitrogen is the limiting design parameter.
- 40-1090**  
Engineering systems. Loehr, R., et al, MP 1948, Workshop on Utilization of Municipal Wastewater and Sludge on Land, 1983. Proceedings. Edited by A.L. Page, L. Gleason, III, J.E. Smith, Jr., I.K. Iskandar, and I.E. Sommers, Riverside, University of California, 1983, p.409-417. Includes discussions.  
Reed, S.C.  
Waste treatment, Water treatment, Sludges, Land reclamation, Water pollution, Countermeasures.
- 40-1091**  
Incidental agriculture reuse application associated with land treatment of wastewater—research needs. Reed, S.C., MP 1947, Environmental Engineering Research Council Workshop—Water Conservation and Reuse in Industry and Agriculture: Research Needs, Kiawah Island, South Carolina, Mar. 3-6, 1982. Proceedings, New York, NY, American Society of Civil Engineers, 1982, p.91-123, 34 refs.  
Waste treatment, Water treatment, Land reclamation, Seepage, Agriculture, Vegetation, Irrigation, Design, Water pollution, Countermeasures.
- 40-1092**  
Hydrodynamics and heat-mass transfer on permeable surfaces. (Gidrodinamika i teplotmassoobmen na pronitsaemykh poverkhnostyakh), Eroshenko, V.M., et al, Moscow, Nauka, 1984, 274p., In Russian with abridged English table of contents enclosed. 481 refs.  
Zalchik, L.I.  
Hydrodynamics, Porous materials, Heat transfer, Mass transfer, Laminar flow, Turbulent exchange, Heat flux, Pipes, Surface properties, Permeability.
- 40-1093**  
Algae in ecosystems of the Far North. (Vodorosli v ekosistemakh Krai nego Severa), Getsen, M.V., Leningrad, Nauka, 1985, 168p., In Russian with abridged English table of contents enclosed. Refs. p.143-163.  
Algae, Plant ecology, Environmental protection, Ecosystems, Tundra, Human factors, Lakes, Water pollution, Swamps, Soil pollution.
- 40-1094**  
Lithogenesis of the periglacial and cryogenic zone. (Litogenez periglatsial'noi i kriogennoi zony), Popov, A.I., XI Kongress INKVA: itogi i perspektivy (Eleventh INKVA congress: results and prospects) edited by M.N. Alekseev, I.K. Ivanova and M.I. Nel'shtadt, Moscow, Nauka, 1985, p.78-86, In Russian. 12 refs.  
Glacial hydrology, Permafrost origin, Periglacial processes, Permafrost transformation, Sediments, Mountain glaciers, Hydrothermal processes, Frost penetration, Freeze thaw cycles.
- 40-1095**  
Climate and glaciation history of Antarctica and the southern ocean. (Voprosy istorii klimata i oledeneniia Antarkudy i IUzhnogo okeana), Grosval'd, M.G., et al, XI Kongress INKVA: itogi i perspektivy (Eleventh INKVA congress: results and prospects) edited by M.N. Alekseev, I.K. Ivanova and M.I. Nel'shtadt, Moscow, Nauka, 1985, p.107-112, In Russian.  
Shishorina, Zh.G.  
Glaciation, Glacier ice, Paleoclimatology, Glacier oscillation, Sea ice distribution.  
The papers presented at a symposium held in connection with the INKVA Congress are reviewed. They deal with results obtained from the study of continental sediments, and those derived from the study of deep-water ocean sediments. A map is presented showing the ice distribution in the southern polar regions during the last glaciation, 17-21 thousand years ago, over Antarctica, the southern ocean, South America and New Zealand.
- 40-1096**  
Remote sensing in studying Siberian topography. (Distsionnyye issledovaniia rel'efa Sibiri), Ian'shin, A.L., ed, Novosibirsk, Nauka, 1985, 92p., In Russian. For selected papers see 40-1097 through 40-1103. Refs. passim.  
Sharapov, V.N., ed.  
Mapping, Spaceborne photography, Maps, Aerial surveys, Photointerpretation, Geomorphology, Natural resources, Topography, Snow cover distribution, Soils, Landscape types.
- 40-1097**  
Remote sensing in studying dynamics of natural processes within limits of structural-geomorphological complexes of western Siberia. (Primenenie distantsionnykh issledovanih v izuchenii dinamiki prirodnykh protsessov v predelakh strukturno-geomorfologicheskikh kompleksov Zapadnoi Sibiri), Ziat'kova, L.K., Distsionnyye issledovaniia rel'efa Sibiri (Remote sensing in studying Siberian topography) edited by A.L. Ian'shin and V.N. Sharapov, Novosibirsk, Nauka, 1985, p.19-27, In Russian. Refs. p.25-27.  
Spaceborne photography, Aerial surveys, Photointerpretation, Mapping, Landscape types, Climatic factors, Topography, Slope processes, Solifluction, Permafrost distribution, Soil erosion.
- 40-1098**  
Using satellite data in studying West Siberian soils. (Ispol'zovanie aerokosmicheskikh materialov pri izuchenii pochv Zapadnoi Sibiri), Ovchinnikov, S.M., Distsionnyye issledovaniia rel'efa Sibiri (Remote sensing in studying Siberian topography) edited by A.L. Ian'shin and V.N. Sharapov, Novosibirsk, Nauka, 1985, p.41-51, In Russian. 24 refs.  
Peat, Taiga, Organic soils, Cryogenic soils, Maps, Podsol, Vegetation, Paludification, Permafrost distribution, Soil composition, Snow cover distribution.
- 40-1099**  
Soil-geobotanical regionalization on the basis of satellite photographs. (Pochvenno-geobotanicheskoje regionalirovanie na osnove aerokosmicheskikh snimkov), Gorozhankina, S.M., et al, Distsionnyye issledovaniia rel'efa Sibiri (Remote sensing in studying Siberian topography) edited by A.L. Ian'shin and V.N. Sharapov, Novosibirsk, Nauka, 1985, p.51-58, In Russian. 7 refs.  
Konstantinov, V.D.  
Spaceborne photography, Geobotanical interpretation, Taiga, Photointerpretation, Alpine tundra, Swamps, Vegetation, Plant ecology, Classification, Mapping, Maps.
- 40-1100**  
Studying geomorphological conditions of soil development in taiga from satellite photographs. (Izuchenie geomorfologicheskikh uslovii taichnogo pochvoobrazovaniia po aerokosmicheskim snimkam), Konstantinov, V.D., Distsionnyye issledovaniia rel'efa Sibiri (Remote sensing in studying Siberian topography) edited by A.L. Ian'shin and V.N. Sharapov, Novosibirsk, Nauka, 1985, p.58-66, In Russian. 7 refs.  
Taiga, Spaceborne photography, Cryogenic soils, Photointerpretation, Topography, Soil formation, Mapping, Charts.
- 40-1101**  
Remote indications of podsollic, surface-gleyey soils in central taiga of the Ob' River area. (Distsionnaia indikatsiia podzolistykh poverkhnostno-gleevatykh pochv srednetaichnogo Priob'ia), Ovchinnikov, S.M., et al, Distsionnyye issledovaniia rel'efa Sibiri (Remote sensing in studying Siberian topography) edited by A.L. Ian'shin and V.N. Sharapov, Novosibirsk, Nauka, 1985, p.66-73, In Russian. 11 refs.  
Sedykh, V.N., Kul'shin, V.A.  
River basins, Forest fires, Spaceborne photography, Taiga, Soil erosion, Geobotanical interpretation, Revegetation, Cryogenic soils, Podsol, Route surveys.

- 40-1102  
Using satellite information in evaluating changes in geocryological conditions in the upper Legleger River area (Southern Yakutia). [Isopol'zovanie aerokosmicheskoi informatsii pri otsenke izmeneniia geokriologicheskoi obstanovki v verkhov'iakh r. Legleger (Iuzhnaia Iakutiia)]. Shata, M.M., et al, Distantionnye issledovaniia rel'efa Sibiri (Remote sensing in studying Siberian topography) edited by A.L. Ianushin and V.N. Sharapov, Novosibirsk, Nauka, 1985, p.82-88, In Russian. 8 refs.
- Dorofeev, I.V.  
River basins, Permafrost distribution, Permafrost hydrology, Snow cover distribution, Vegetation, Cryogenic soils, Spaceborne photography, Human factors.
- 40-1103  
Using satellite information in evaluating water equivalency of snow. [Opyt primeneniia kosmicheskoi informatsii dlia otsenki uvlazhnenosti snezhnogo pokrova]. Vostriakova, N.V., Distantionnye issledovaniia rel'efa Sibiri (Remote sensing in studying Siberian topography) edited by A.L. Ianushin and V.N. Sharapov, Novosibirsk, Nauka, 1985, p.88-91, In Russian. 4 refs.
- Spaceborne photography, Snow cover distribution, Snow line, Snow depth, Snow water equivalent.
- 40-1104  
Large-scale ice strength tests, 1979/80. Lecourt, E.J., et al, ARCTEC, Incorporated, Report 535H, June/July 1980, 4 vols. + append. A-E, Refs. passim.
- Benze, D.J., Kosterich, P.P., Toeneboehn, J.G., Hennessy, W.F., Reid, A.H.  
Ice cover strength, Loads (forces), Strain tests, Stresses, Pressure, Ice strength, Measuring instruments, Computer programs, Analysis (mathematics), Tests.
- 40-1105  
Frost heave model calculations for the Calgary Frost Heave Test Facility. L.E.G. Engineering, Ltd., Canada. Department of Energy, Mines and Resources. Earth Physics Branch. Open file, Apr. 1985, No.85-13, 25p. + figs., 13 refs.
- Frost heave, Thermal insulation, Ground ice, Frost resistance, Models, Tests, Forecasting, Pipelines, Temperature gradients, Frost penetration.
- 40-1106  
13th annual Arctic Workshop, March 15-16-17, 1984. Arctic Workshop, 13th, Boulder, CO, Mar. 15-17, 1984, Boulder, University of Colorado, Institute of Arctic and Alpine Research, 1984, 72p., Refs. passim. For selected papers see 40-1107 through 40-1112.
- Glacial deposits, Glacial geology, Pingos, Hummocks, Lichens, Meetings, Glaciation, Ice sheets, Paleoclimatology, Bottom sediment, United States—Alaska.
- 40-1107  
Growth and flowering of cottongrass tussocks along a climatic transect in northcentral Alaska. Haugen, R.K., et al, MP 1950, Arctic Workshop, 13th, Boulder, CO, Mar. 15-17, 1984. [Proceedings], Boulder, University of Colorado, Institute of Arctic and Alpine Research, 1984, p.10-11, 2 refs.
- Shaver, G.R., King, G.G.  
Hummocks, Plant physiology, Growth, Climatic factors, Air temperature, Precipitation (meteorology), Pipelines, Altitude, United States—Alaska.
- 40-1108  
Glacial geology of the McKinley River area, northcentral Alaska Range, Alaska. Werner, A., Arctic Workshop, 13th, Boulder, CO, Mar. 15-17, 1984. [Proceedings], Boulder, University of Colorado, Institute of Arctic and Alpine Research, 1984, p.20-22.
- Glacial geology, Geomorphology, Moraines, Paleoclimatology, United States—Alaska—McKinley River.
- 40-1109  
Direct measurement of lichen growth, Brooks Range, Alaska. Haworth, L.A., et al, Arctic Workshop, 13th, Boulder, CO, Mar. 15-17, 1984. [Proceedings], Boulder, University of Colorado, Institute of Arctic and Alpine Research, 1984, p.23-25, 1 ref.
- Calikin, P.E., Ellis, J.M.  
Lichens, Plant physiology, Growth, United States—Alaska—Brooks Range.
- 40-1110  
Puzzling pingos of Prudhoe Bay. Walker, D.A., et al, Arctic Workshop, 13th, Boulder, CO, Mar. 15-17, 1984. [Proceedings], Boulder, University of Colorado, Institute of Arctic and Alpine Research, 1984, p.30-31, 6 refs.
- Walker, M.D., Everett, K.R., Webber, P.J.  
Pingos, Permafrost distribution, Patterned ground, United States—Alaska—Prudhoe Bay.
- 40-1111  
Glacial geology on Hornstradir, northwesternmost Iceland. Hjort, C., Arctic Workshop, 13th, Boulder, CO, Mar. 15-17, 1984. [Proceedings], Boulder, University of Colorado, Institute of Arctic and Alpine Research, 1984, p.64-65.
- Glacial geology, Paleoclimatology, Glaciation, Iceland.
- 40-1112  
Numerical modeling of Jakobshavn ice stream, West Greenland. Lingle, C.S., Arctic Workshop, 13th, Boulder, CO, Mar. 15-17, 1984. [Proceedings], Boulder, University of Colorado, Institute of Arctic and Alpine Research, 1984, p.69-70, 5 refs.
- Ice sheets, Glacier flow, Mathematical models, Grounded ice, Glacier oscillation, Greenland—Jakobshavn Fjord.
- 40-1113  
National petroleum reserve in Alaska: earth-science considerations. Gryc, G., U.S. Geological Survey. Professional paper, 1985, No.1240-C, 94p., 44 refs.
- Petroleum industry, Permafrost distribution, Road icing, Transportation, Patterned ground, Natural gas, Natural resources, United States—Alaska.
- 40-1114  
Future transpolar and high Arctic routes. [Rotte future transpolari e dell'Artico superiore]. McLaren, A.S., *Il polo*, Apr. 1985, 41(1), p.30-41, In Italian. Refs. p.39-41.
- Ice navigation, Sea ice distribution, Subglacial observations, Oceanography, Ice cover effect, Polynyas.
- 40-1115  
State of natural environment in relation to the development of oil and gas deposits in northern West Siberia. [O sostoianii prirodnoi sredy v sviazi s osvoeniem neftegazovykh mestorozhdenii (na primere Severa Zapadnoi Sibiri)]. Nefedova, V.B., et al, Okhrana prirody okulturenykh landshaftov. Trudy po okhrane prirody No.2 (Environmental protection in economically developed landscapes. Collection of works on environmental protection No.2) edited by E.F. Varep, Tartu, 1978, p.53-56, In Russian with English summary. 1 ref.
- Chizhova, V.P.  
DLC AS262.T22A25  
Drilling, Soil erosion, Petroleum transportation, Tundra, Petroleum industry, Permafrost distribution, Talga, Paludification.
- 40-1116  
Data on thixotropic strengthening of loess. [Nekotorye dannye o tiksotropnom uprochnenii lessovykh porod]. Lysenko, M.P., Leningrad. Universitet. Vestnik, Mar. 1979, 6(1), p.44-47, In Russian with English summary.
- Loess, Thixotropy, Clay soils, Soil compaction, Soil water migration.
- 40-1117  
Subsurface drainage on peat soils of the Amur River area. [Zakrytyi drenazh na torfianykh pochvakh Priamur'ia]. Volituk, S.P., *Gidrotekhnika i melioratsiia*, Oct. 1978, No.10, p.48-51, In Russian.
- Swamps, Peat, Clays, Subsurface drainage, Organic soils, Cryogenic soils, Thermal regime, Frost penetration.
- 40-1118  
Studying the softening of clayey soils with different wetting regimes. [Issledovanie razuprochneniia glinistykh grunov pri razlichnykh rezhimakh uvlazhneniia]. Ivanov, I.P., et al, Leningrad. Universitet. Vestnik, Sep. 1978, 18(3), p.54-60, In Russian with English summary. 1 ref.
- Ivanikova, N.P., Rudneva, I.E.  
Clays, Soil strength, Thixotropy, Pines, Landslides, Clay soils, Settlement (structural), Foundations, Moisture transfer.
- 40-1119  
Mudflow process and its modeling. [Selevyi protsess i ego modelirovani]. Kovalev, A.P., *Fizicheskaiia geografiia i geomorfologiia*, 1978, Vol.20, p.17-24, In Russian with English summary. 19 refs.
- Solifluction, Slope processes, Mudflows, Talus, Sediment transport, Rain, Freeze thaw cycles.
- 40-1120  
Theoretical and experimental study of radar backscatter from sea ice. Kim, Y.-S., Lawrence, University of Kansas, 1984, 168p., University Microfilms order No.8424299, Ph.D. thesis. Refs. p.163-168.
- Sea ice distribution, Microwaves, Radar echoes, Backscattering, Ice electrical properties, Mathematical models, Surface roughness, Temperature effects, Snow cover effect, Salinity, Dielectric properties.
- 40-1121  
Techniques for prediction of runoff from glacierized areas. Young, G.J., ed, *International Association of Hydrological Sciences. Publication*, 1985, No.149, 149p., Refs. For individual papers see 40-1122 through 40-1133.
- Glacial hydrology, Runoff, Floods, Water supply, Mountain glaciers, Forecasting.
- 40-1122  
Overview. Young, G.J., *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.3-23, 1 ref.
- Runoff, Glacial hydrology, Mountain glaciers, Floods, Snowmelt, Water supply, Snow cover distribution, Climatic factors, Water balance, Precipitation (meteorology).
- 40-1123  
Overview of contemporary techniques. Fountain, A.G., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.27-41, 24 refs.
- Tangborn, W.  
Runoff forecasting, Glacial hydrology, Water reserves, Glacier mass balance, Models.
- 40-1124  
Water supply, Switzerland. Lang, H., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.45-57, 5 refs.
- Dayer, G.  
Water supply, Runoff forecasting, Glacial hydrology, Drainage, Meteorological factors, Models, Albedo, Switzerland.
- 40-1125  
Water supply, Canada. Power, J.M., *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.59-71, 11 refs.
- Glacial hydrology, Water supply, Runoff, Hydrology, Ice melting, Rivers, Models, Water reserves, Drainage, Seasonal variations, Canada.
- 40-1126  
Water supply, Greenland. Gottlieb, L., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.73-80, 26 refs.
- Braithwaite, R.J.  
Water supply, Runoff forecasting, Glacial hydrology, Glacier oscillation, Glacier mass balance, Models, Greenland.
- 40-1127  
Water supply, USSR. Krenke, A.N., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.81-99, 10 refs.
- Kotliakov, V.M.  
Glacial hydrology, Runoff forecasting, Water supply, Glacier melting, Glacier mass balance, Air temperature, Mathematical models, River flow, Computer applications, USSR.
- 40-1128  
Water supply, China. Yang, Z., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.101-107, 4 refs.
- Lai, Z.  
Glacial hydrology, Runoff forecasting, Water supply, Meltwater, Flood forecasting, Mountain glaciers, Meteorological factors, China.

40-1129

Water supply, Pakistan.  
Tarrar, R.N., *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.109-113, 2 refs.  
Runoff forecasting, Water supply, River flow, Melt-water, Remote sensing, Snowmelt, Ice melting, Pakistan.

40-1130

Catastrophic floods, USSR.  
Krenke, A.N., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.115-124, 3 refs.  
Kotliakov, V.M.  
Floods, Glacial lakes, Subglacial caves, Runoff, River flow, Mountain glaciers, Models, Analysis (mathematics), USSR.

40-1131

Catastrophic floods, Nepal.  
Fushimi, H., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.125-130, 5 refs.  
Shankar, K., Ikegami, K., Higuchi, K.  
Floods, Glacial lakes, Runoff, Moraines, Mountain glaciers, Damage, Topographic features, Nepal.

40-1132

Catastrophic floods, Pakistan.  
Hewitt, K., *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.131-135, 5 refs.  
Floods, Glacial rivers, Runoff, Mountain glaciers, Landslides, Dams, Damage, Glacier surveys, Glacial hydrology, Flood forecasting, Pakistan.

40-1133

Catastrophic floods, Canada.  
Young, G.J., *International Association of Hydrological Sciences. Publication*, 1985, No.149, p.137-143, 5 refs.  
Floods, Glacial lakes, Glacial hydrology, Runoff, Stream flow, Glacial rivers, Mountain glaciers, Canada.

40-1134

Communities of the Far North and man. (Soobshchestva Kraĭnego Severa i chelovek).  
Sokolov, V.E., ed, Moscow, Nauka, 1985, 273p., In Russian. For selected papers see 40-1135 through 40-1143. Refs. passim.  
Tundra, Mapping, Forest tundra, Meadows, Geomorphology, Landscape types, Grasses, Plant ecology, Microclimatology, Biomass, Human factors, Meteorological data, Ecosystems, Environmental impact, Meteorological charts, Cryogenic soils.

40-1135

Environment and communities of the tundra zone. (Sreda i soobshchestva tundrovoy zony).  
Chernov, I.U.I., Soobshchestva Kraĭnego Severa i chelovek (Communities of the Far North and man) edited by V.E. Sokolov, Moscow, Nauka, 1985, p.8-22, In Russian with English summary. 16 refs.  
Tundra, Plant ecology, Cryogenic soils, Ecosystems, Landscape types, Soil temperature, Meteorological data, Meteorological charts.

40-1136

Climatic dependence of the southern boundary of tundra. (Klimaticheskaya obuslovlennost' iuzhnoy granitsy tundry).  
Puzachenko, I.U.G., Soobshchestva Kraĭnego Severa i chelovek (Communities of the Far North and man) edited by V.E. Sokolov, Moscow, Nauka, 1985, p.22-56, In Russian with English summary. 34 refs.  
Tundra, Forest tundra, Permafrost distribution, Mapping, Charts, Soil temperature, Meteorological data.

40-1137

Principles of classification of tundra vegetation in the Taymyr Peninsula. (Printsipy klassifikatsii rastitel'nosti tundrovoy zony (na primere Taymyra)).  
Matveeva, N.V., Soobshchestva Kraĭnego Severa i chelovek (Communities of the Far North and man) edited by V.E. Sokolov, Moscow, Nauka, 1985, p.56-79, In Russian with English summary. 34 refs.  
Tundra, Vegetation, Forest tundra, Landscape types, Cryogenic soils, Plant ecology, Ecosystems, Classifications.

40-1138

General characteristics of primary biological productivity and biogeochemical cycles in the Far North (the Kola Peninsula). (Obshchie osobennosti pervichnoy biologicheskoy produktivnosti i biogeokhimicheskikh tsiklov na Kraĭnem Severe (na primere Kol'skogo Polostrova)).  
Nikonov, V.V., Soobshchestva Kraĭnego Severa i chelovek (Communities of the Far North and man) edited by V.E. Sokolov, Moscow, Nauka, 1985, p.79-90, In Russian with English summary. 8 refs.  
Biomass, Ecosystems, Cryogenic soils, Microclimatology, Tundra, Plant ecology, Geomorphology, Soil composition, Landscape types, Vegetation.

40-1139

Ecologic and phytocenotic processes originating during grassland establishment in tundra. (Ekologofitsotsenoticheskie protsessy pri zaluzhenii tundry).  
Archevova, I.B., et al, Soobshchestva Kraĭnego Severa i chelovek (Communities of the Far North and man) edited by V.E. Sokolov, Moscow, Nauka, 1985, p.91-115, In Russian with English summary. 33 refs.  
Grulina, L.K., Kotelina, N.S., Shvetsova, V.M.  
Tundra, Swamps, Peat, Cryogenic soils, Vegetation, Plant ecology, Ecosystems, Mosses, Grasses, Biomass.

40-1140

Meadow grasses of tundra as main food for milk-producing animals. (Zaluzhenie—osnova obespecheniya kormami molochnogo zhivotnovodstva v tundre).  
Khanitimer, I.S., Soobshchestva Kraĭnego Severa i chelovek (Communities of the Far North and man) edited by V.E. Sokolov, Moscow, Nauka, 1985, p.115-133, In Russian with English summary. 7 refs.  
Tundra, Meadows, Grasses, Cryogenic soils, Plant ecology, Ecosystems.

40-1141

Dynamics of vegetation in economically developing areas of the Far North. (Dinamika rastitel'nosti v raionakh intensivnogo osvoeniya Kraĭnego Severa).  
Druzhinina, O.A., Soobshchestva Kraĭnego Severa i chelovek (Communities of the Far North and man) edited by V.E. Sokolov, Moscow, Nauka, 1985, p.205-231, In Russian with English summary. 3 refs.  
Tundra, Cryogenic soils, Forest tundra, Landscape types, Economic development, Environmental impact.

40-1142

Composition of plant species in strongly disturbed areas of the Anadyr' River basin. (Vidovoi sostav rastenii na sil'no narushennykh uchastkakh v basseine r. Anadyrya).  
Korobkov, A.A., Soobshchestva Kraĭnego Severa i chelovek (Communities of the Far North and man) edited by V.E. Sokolov, Moscow, Nauka, 1985, p.231-244, In Russian with English summary. 3 refs.  
River basins, Alpine tundra, Mountain soils, Cryogenic soils, Alpine landscapes, Mosses, Lichens, Ecosystems, Plant ecology.

40-1143

Preservation of botanical objects in the Chukotskaya tundra. (Problemy okhrany botanicheskikh ob'ektov v Chukotskoi tundre).  
Iurtsev, B.A., et al, Soobshchestva Kraĭnego Severa i chelovek (Communities of the Far North and man) edited by V.E. Sokolov, Moscow, Nauka, 1985, p.245-271, In Russian with English summary. 29 refs.  
Katenin, A.E., Korobkov, A.A.  
Tundra, Thermokarst, Soil erosion, Cryogenic soils, Economic development, Permafrost hydrology, Tracked vehicles, Environmental protection, Grasses, USSR—Chukotskiy Peninsula.

40-1144

Nonsteady heat and moisture transfer in capillary-porous colloidal bodies with convective drying.  
Todorov, B.A., *Journal of engineering physics*, Oct. 1984 (Pub. Apr. 85), 47(4), p.1225-1230, Translated from *Inzhenerno-fizicheskii zhurnal* 7 refs.  
Colloids, Drying, Capillarity, Hygroscopic water, Porosity, Capillarity, Moisture transfer, Heat transfer, Mathematical models.

40-1145

Freezing of the thawed zone around a well in frozen soils, taking into account the pressure-dependence of the temperature of freezing.  
Dubina, M.M., et al, *Journal of engineering physics*, Jan. 1985 (Pub. Jul. 85), 48(1), p.101-107, Translated from *Inzhenerno-fizicheskii zhurnal*. 5 refs.  
Krasovitskii, B.A.  
Drilling, Wells, Well casings, Permafrost, Frost action, Heat transfer, Mass transfer, Analysis (mathematics).

40-1146

Possibilities of combined thermal insulation and corrosion protection of pipelines. (Vozmozhnosti kompleksnoi teploizolatsii i zashchity truboprovodov ot korrozii).  
Zinevich, A.M., et al, *Stroitel'stvo truboprovodov*, Sep. 1985, No.9, p.13, In Russian. 1 ref.  
Pipelines, Thermal insulation, Cellular plastics.

40-1147

Using foam plastic for thermal insulation of pipelines. (Primenenie fenol'nykh penoplastov dlia teploizolatsii truboprovodov).  
Krashennnikov, A.N., et al, *Stroitel'stvo truboprovodov*, Sep. 1985, No.9, p.14-15, In Russian.  
Ivanov, V.V., Shutov, F.A.  
Pipeline insulation, Thermal insulation, Cellular plastics.

40-1148

Preliminary cementation of water-bearing layers for the construction of the Severo-Muyskiy tunnel of the BAM. (Predvaritel'naia tsementatsiya vodonosnykh porod pri prokhodke stvolov Severo-Muyskogo tonnela BAM).  
Frolov, I.N., et al, *Shakhtnoe stroitel'stvo*, June 1985, No.6, p.19-22, In Russian.  
Solodovnikov, A.V., Logachev, N.T.  
Tunneling (excavation), Ground water, Artificial freezing, Baykal Amur railroad, Tunnels, Cements.

40-1149

Dependence of dielectric permeability of pore fluid in frozen rocks on temperature and mineralization. (Zavisimost' dielektricheskoi pronitsaemosti porovoi zhidkosti v merzlykh porodakh ot temperatury i mineralizatsii).  
Talalov, A.D., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya. Izvestiya vysshih uchebnykh zavedenii. Geologiya i razvedka*, June 1985, No.6, p.93-97, In Russian. 12 refs.  
Frozen fines, Unfrozen water content, Porosity, Phase transformations, Dielectric properties.

40-1150

Radiocarbon data obtained from the deposits enclosing ice and the age of the bedded ice. (Dannye radiouglerodnogo metoda po vmeshchayushchim led otlozheniyam i vozrast plastovykh l'dov).  
Karpov, E.G., *Geologiya i geofizika*, May 1985, No.5, p.51-57, In Russian with English summary. 9 refs.  
Moraines, Ice dating, Radioactive age determination, Glacier ice.

40-1151

Investigation of the fate and effects of a paraffin based crude oil in an antarctic terrestrial ecosystem.  
Konlechner, J.C., *New Zealand antarctic record*, 1985, 6(3), p.40-46, 9 refs.  
Oil spills, Ecosystems, Environmental tests, Cold weather tests, Antarctica—Bird, Cape.

Knowledge of the potential fate and effects of spilt hydrocarbon pollutants in antarctic coastal systems is limited to a small number of impact assessments, and to sometimes tenuous analogy with Arctic oil developments. To provide data relevant to Antarctica two small controlled oil spills were established at Cape Bird, Ross Island in November 1982. These experimental spills were examined in subsequent seasons. The Cape Bird study site lies in the southwestern corner of the Ross Sea. This region is judged to be particularly likely to receive impacting oil because of prevailing current patterns. Cape Bird supports one of the richest terrestrial biological communities known in Southern Victoria Land and the adjacent offshore islands. Methods used in and results of the spill experiments are presented and discussed. (Auth. mod.)

40-1152

Housing the British Antarctic Survey.  
Wilson, P., *Biologist*, June 1985, 32(3), p.162-164.  
DLC QH1.143

Cold weather construction, Logistics.  
Development and evolution of building design for the BAS in Antarctica is traced. Five antarctic stations are involved. Halley and Faraday are geophysical observatories. Signy and Bird Islands are biological stations, and Rothera is the center for field deployment and airborne studies of earth sciences. Major reconstruction programs began in 1972 and 1980 at Halley to diminish the crushing effects of ice and snow. BAS Headquarters was established all under one roof in 1976 with inside spaces being arranged by major discipline divisions.

40-1153

Plant and soil water storage in Arctic and boreal forest ecosystems.  
Miller, P.C., Variations in the global water budget. Edited by A. Street-Perrott, M. Eeran, and R. Ratcliffe, Dordrecht, D. Reidel, 1983, p.185-196, 29 refs.  
DLC GB605 V27 1983  
Water storage, Forest ecosystems, Soil water, Seasonal freeze thaw, Polar regions.

40-1154

Recent fluctuations of Alpine glaciers and their meteorological causes: 1880-1980. Reynaud, L., Variations in the global water budget. Edited by A. Street-Perrott, M. Beran, and R. Ratcliffe, Dordrecht, D. Reidel, 1983, p.197-205, 15 refs. DLC GB665.V27 1983

Glacier mass balance, Glacier oscillation, Meteorological factors, Alps.

40-1155

Radiometric chronology of some Himalayan glaciers. Bhandari, N., et al, Variations in the global water budget. Edited by A. Street-Perrott, M. Beran, and R. Ratcliffe, Dordrecht, D. Reidel, 1983, p.207-216, 11 refs.

Nijampukar, V.N., Vohra, C.P.

DLC GB665.V27 1983

Glacier ice, Radiometry, Radioactive isotopes, Ice cores, Himalaya Mountains.

40-1156

Arctic acoustic tomography MIZEX 84. Spindel, R.C., Woods Hole Oceanographic Institution. Technical report, Apr. 1985, WHOI-85-15, 13p., ADA-154 426, 5 refs

Underwater acoustics, Ice cover effect, Wave propagation, Sound transmission, Velocity, Acoustic measurement, Arctic Ocean.

40-1157

Arctic land-sea interaction. Arctic Workshop, 14th, Dartmouth, Nova Scotia, Nov. 6-8, 1985, Nov. 1985, 237p., Refs. passim. For selected papers see 40-1158 through 40-1174. Sedimentation, Shore erosion, Permafrost physics, Subsea permafrost, Sediment transport, Ice cover effect, Meetings, Ice scoring, Bottom sediment, Shoreline modification.

40-1158

Sediment reworking, transport, and deposition on the Alaskan Beaufort shelf; the role of ice, in relation to waves, currents, and infauna.

Barnes, P.W., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.37-40, 7 refs.

Reimnitz, E.

Sedimentation, Sediment transport, Ice cover effect, Sea ice, Ocean waves, Ocean currents, Marine biology, Beaufort Sea.

40-1159

Preliminary assessment of the occurrence and distribution of subsea permafrost in Norton Sound. Osterkamp, T.E., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.48-50, 4 refs.

Harrison, W.D., Hopkins, D.M.

Subsea permafrost, Permafrost distribution, Shore erosion, Heat flux, Boreholes, Ground ice, Drilling, United States—Alaska—Norton Sound.

40-1160

Intertidal sedimentation in high Arctic fiords, east-central Ellesmere Island.

Krawetz, M.T., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.68-69. McCann, S.B.

Sedimentation, Sea ice, Tides, Channels (waterways), Ice conditions, Coastal topographic features, Fiords.

40-1161

Aeolian processes, controls and features in the Eastern Canadian Arctic.

McKenna-Newman, C., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.78-81, 4 refs.

Gilbert, R.

Sediment transport, Periglacial processes, Topographic features, Eolian soils, Desert soils, Glacial deposits, Wind velocity, Vegetation, Sedimentation.

40-1162

Stratigraphy and sedimentology of high Arctic coastal lake basins northern Ellesmere Island, North West Territories.

Retelle, M.J., Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.88-89, 4 refs.

Lacustrine deposits, Limnology, Sedimentation, Drill core analysis, Lakes, Canada—Northwest Territories—Ellesmere Island.

40-1163

Pumping away tide water glaciers and ice shelves. Lewis, E.L., Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.94-96, 6 refs.

Glacier ice, Tidal currents, Meltwater, Ice formation, Ice shelves, Water temperature, Ice water interface, Supercooling.

Evidence for an ice pump's operation at the Ross Ice Shelf, Antarctica, shows the supercooling immediately below the sea ice in McMurdo Sound where massive underwater ice formation was taking place. Near the edge of the Ross Ice Shelf, melt rates of up to 6 m/year could take place, assuming no restriction in water movement over the depth interval of pump operation.

40-1164

Iceberg calving and its influence on ice-proximal subaqueous glaciogenic lithofacies.

Powell, R.D., Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.101-103. Icebergs, Ice shelves, Calving, Mathematical models, Water level, Water waves, Wind factors, Sediment transport.

40-1165

Sea floor evidence for glacier surges, Nordaustlandet, Svalbard.

Solheim, A., Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.104-105. Glacier surges, Ocean bottom, Grounded ice, Bottom sediment, Moraines, Geomorphology, Glacial deposits, Norway—Svalbard.

40-1166

Morphology and processes of the Canadian Beaufort Sea coast.

Harper, J.R., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.110-111. Collins, A., Reiner, P.D.

Shoreline modification, Ground ice, Sediments, Shore erosion, Coastal topographic features, Beaufort Sea.

40-1167

Ground ice slumps, Beaufort Sea coast, Yukon Territory.

Harry, D.G., Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.115-117, 6 refs.

Shore erosion, Ground ice, Ground thawing, Permafrost, Thermokarst, Shoreline modification, Sediments, Moraines, Canada—Yukon Territory.

40-1168

Eroding coast of the Alaskan Beaufort Sea, its sediment supply and sinks.

Reimnitz, E., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.118-119, 6 refs.

Graves, S.M., Barnes, P.W.

Shore erosion, Sediments, Ground ice, Frozen ground settling, Shoreline modification, Deltas, Grain size, Ocean environments, Beaufort Sea.

40-1169

Glacio-marine outwash deltas, ice retreat and stable ice fronts in the north eastern coastal regions of Ungava.

Gray, J., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.150-153. Lauriol, B., Ricard, J.

Shoreline modification, Deltas, Shore erosion, Glacial erosion, Ice sheets, Moraines, Paleoclimatology, Geomorphology, Canada—Quebec—Ungava Peninsula.

40-1170

Factors affecting the extent of the fast ice cover in south-eastern Hudson Bay.

Larouche, P., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.157-159, 1 ref.

Galbraith, P.

Fast ice, Ice conditions, Drift, Degree days, Ice floes, Ice breakup, Canada—Quebec—Hudson Bay.

40-1171

Thermal observations of permafrost growth at the Ilisarvik drained lake site Richards Island, Mackenzie Delta, N.W.T.

Burgess, M.M., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.188-190.

Judge, A.S., Taylor, A.E., Allen, V.S.

Permafrost thermal properties, Freeze thaw cycles, Permafrost physics, Shore erosion, Taliks beneath lakes, Geothermy, Soil temperature, Freezing points, Canada—Northwest Territories—Mackenzie Delta.

40-1172

Permafrost aggradation in the tidal zone, Churchill, Manitoba.

Dyke, L., Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.191-192.

Permafrost distribution, Shores, Permafrost thermal properties, Boreholes, Temperature measurement, Electrical resistivity, Canada—Manitoba—Churchill.

40-1173

Utility of thematic mapper thermal data for discriminating boreal forest communities.

Morrissey, L.A., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.200-202.

Card, D.H.

Forestry, Slope orientation, Thermal regime, Vegetation, Solar radiation, Diurnal variations, Classifications, Seasonal variations.

40-1174

Shallow sediment temperatures and thermal properties, Canadian Beaufort Continental Shelf.

Taylor, A., et al, Arctic Workshop: Arctic Land-Sea Interaction, 14th, Dartmouth, Nova Scotia, Canada, Nov. 6-8, 1985. Proceedings, Nov. 1985, p.207-209. Allen, V.

Bottom sediment, Soil temperature, Thermal properties, Subsea permafrost, Ground ice, Temperature distribution, Beaufort Sea.

40-1175

Ice drilling technology.

Holdsworth, G., ed, U.S. Army Cold Regions Research and Engineering Laboratory, Dec. 1984, SR 84-34, 142p., ADA-156 733, Refs. passim. For individual papers see 40-1176 through 40-1199 or F-32743 through F-32750.

Kuivinen, K.C., ed, Rand, J.H., ed, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982.

Ice coring drills, Ice cores, Borehole instruments, Ice drills, Meetings, Drilling fluids, Temperature effects. The Symposium on Ice Drilling Technology dealt with research on the operation and design of ice coring drills. Various types of drills, as well as drilling fluids, used in the Arctic and Antarctica are described. The boreholes and ice cores are used to study ice physics and climatic changes.

40-1176

Overview of ice drilling technology.

Hansen, B.L., U.S. Army Cold Regions Research and Engineering Laboratory. Special report, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.1-6, ADA-156 733, Refs. p.4-6.

Ice coring drills, Ice cores, Drill core analysis, Water temperature, Drilling, Borehole instruments.

The significant advancements in ice drilling technology since the Ice-Core Drilling Symposium at Lincoln, Nebraska, in August 1974 are reviewed. Three examples are the flame jet and hot water drilling through the Ross Ice Shelf in Antarctica and the deep core drilling at Dye 3 in South Greenland. (Auth.)

40-1177

ISTUK—a deep ice core drill system.

Gundestrup, N.S., et al, U.S. Army Cold Regions Research and Engineering Laboratory. Special report, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.7-19, ADA-156 733, 13 refs.

Johnsen, S.J., Keeh, N.

Ice coring drills, Ice cores, Borehole instruments, Drilling, Temperature effects.

40-1178

Canadian Ruffi-Rand electro-mechanical core drill and reaming devices.

Holdsworth, G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.21-32, ADA-156 733, 10 refs.

**Ice coring drills, Ice cores, Borehole instruments, Equipment, Drilling.**

An electro-mechanical ice core drill of medium depth capability, was built in Ottawa in 1980. The design is based on principles established by Ruffi et al. (1976) and Rand (1976). New to the design, however, is a geodesic dome structure which serves both as a structural unit to support the central fixed tower and to provide shelter for the drill crew. The whole unit can be packed in shipping crates weighing a total of 760 Kg, and by suitable dis-assembly, may be fitted into a Helio-Courier (STOL) aircraft in about five loads, including the generator. The ice core is about 96-100 mm in diameter, depending on the cutter setting, and averages about 1 m in length. (Auth. mod.)

40-1179

Light weight electro-mechanical drills.

Suzuki, Y., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.33-40, ADA-156 733, 8 refs.

**Ice coring drills, Ice cores, Borehole instruments, Electric equipment, Drilling.**

40-1180

PICO intermediate drill system.

Litwak, J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.41-44, ADA-156 733, 3 refs.

Kersten, L., Kuivinen, K.

**Ice coring drills, Ice cores, Borehole instruments, Drilling, Equipment, Equipment, Firm, Antarctica—Amundsen-Scott Station.**

The PICO intermediate drill is an electromechanical drilling system designed for continuous coring in firm and ice to a maximum depth of 600 m in an open hole. The 1982-83 antarctic field season provided the first opportunity to test and use the complete intermediate drill system at Amundsen-Scott Station. Design and operation of the new drilling system are described. (Auth. mod.)

40-1181

Recent experiences with a modified Ruffi ice drill.

Jessberger, H.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.45-49, ADA-156 733, 4 refs.

Dörr, R.

**Ice coring drills, Borehole instruments, Ice cores, Electric equipment, Electronic equipment, Ice formation, Drilling.**

40-1182

New horizons in drill development.

Koci, B.R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.51-54, ADA-156 733.

**Ice coring drills, Ice cores, Borehole instruments, Drilling, Equipment.**

40-1183

Lightweight hand coring auger.

Koci, B.R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.55-59, ADA-156 733, 3 refs.

**Ice coring drills, Ice cores, Borehole instruments, Drilling, Equipment.**

40-1184

Ice core drilling on Mt. Wrangell, Alaska, 1982.

Benison, C.S., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.61-68, ADA-156 733, 6 refs.

**Ice coring drills, Ice cores, Glacier ice, Borehole instruments, Drilling, Logistics.**

40-1185

Antitorque leaf springs: a design guide for ice-drill antitorque leaf springs.

Reeh, N., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.69-72, ADA-156 733, 3 refs.

**Ice coring drills, Borehole instruments, Ice drills, Design, Equipment, Analysis (mathematics).**

40-1186

Ice core quality in electro-mechanical drilling.

Gillet, F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.73-80, ADA-156 733, 2 refs.

**Ice coring drills, Ice cores, Ice cracks, Ice cutting, Electric equipment, Fracturing, Borehole instruments.**

40-1187

Deep core drilling: electro-mechanical or thermal drill.

Donnou, D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.81-84, ADA-156 733, 1 ref.

**Ice cores, Ice coring drills, Borehole instruments, Ice drills, Equipment, Antarctica—Dome C.**

In 1977/78 at Dome C, Antarctica, it was not possible to drill deeper than 905 m because of hole closure. The thermal drill has subsequently been modified to drill deeper in a fluid filled hole. Simultaneously, we have developed an electro-mechanical drill which employs a centrifuge device for separating chips and drilling fluid. Both sets of equipment are described here, as well as the main results obtained in the first tests made in Adélie Land in 1981/82. (Auth.)

40-1188

Ice drilling at Cape Folger, Antarctica.

Morgan, V.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.85-86, ADA-156 733, 6 refs.

McCray, A.P., Wehrle, E.

**Ice coring drills, Thermal drills, Boreholes, Ice crystal structure, Rheology, Equipment, Ice deformation, Oxygen isotopes, Antarctica—Folger, Cape.**

Thermal ice drilling undertaken at Cape Folger, Antarctica, in 1981/82, is a continuation of an extensive glaciological investigation of the Law Dome ice cap, which has been studied since 1957. The boreholes drilled in 1969 were used to study ice deformation and the core was used to study ice crystal size, crystal orientation fabric, oxygen isotopes and ice flow properties with depth. The latest drilling is specifically designed to clarify certain peculiarities in the ice flow which were observed previously. There appear to be large irregularities in the magnitude and direction of shear strains. (Auth. mod.)

40-1189

Simple hot-water drill for penetrating ice shelves.

Verrall, R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.87-94, ADA-156 733.

Baade, D.

**Ice coring drills, Ice shelves, Borehole instruments, Water temperature, Hydraulics.**

40-1190

"Climatopic" thermal probe.

Gillet, F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.95-99, ADA-156 733, 2 refs.

**Meltwater, Isotope analysis, Ice coring drills, Drilling, Climatic changes.**

40-1191

Hot water drilling in antarctic firm, and freezing rates in water-filled boreholes.

Koci, B.R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.101-103, ADA-156 733, 4 refs.

**Ice coring drills, Firm, Freezing rate, Drilling fluids, Seismic surveys, Glacier ice, Ice sheets, Ice shelves, Monitors.**

Hot water drilling systems are suitable for applications in which the objective is to gain rapid access to a glacier, ice sheet or ice shelf for seismic shooting, installing temperature sensors, access hole studies or retrieving stuck core drills. The Rosa Ice Shelf Project (RISP) hot water drilling at J-9 showed that the decrease in water temperature at the nozzle was 1 C/30 m (1.8 F/100 ft) of depth. The boiler was rated at 2,500,000 watts. It produced 320 l/m of water heated from 2 C to 98 C (1,700,000 watts). The success of a smaller hot water system (150 kW) used by PICO in 1979-80 at Dome C, Antarctica, in ambient temperatures of -40 C illustrated the speed and reliability possible under extreme environmental conditions. (Auth.)

40-1192

Hot water drill for temperate ice.

Taylor, P.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.105-117, ADA-156 733, 6 refs.

**Ice drills, Water temperature, Hydraulic jets, Flow rate, Borehole instruments, Analysis (mathematics), Tests.**

40-1193

In-situ sampling thermal probe.

Hansen, B.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.119-122, ADA-156 733, 8 refs.

Kersten, L.

**Ice drills, Ice temperature, Sampling, Freezing, Design, Telemetering equipment.**

40-1194

Preliminary results of deep drilling at Vostok Station, Antarctica, 1981-82.

Kudriashov, B.B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.123-124, ADA-156 733, 1 ref.

Chistiakov, V.K., Zagriyev, E.A., Lipenkov, V.IA.

**Ice coring drills, Borehole instruments, Equipment, Ice cores.**

A description is given of the deep thermal core drill being used at Vostok Station, East Antarctica. A report on the drilling progress is also given. Special low temperature liquid was developed and used to fill the borehole to maintain its wall stability during drilling and subsequent logging operations. (Auth. mod.)

40-1195

Equipment and technology for drilling in temperate glaciers.

Morev, V.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.125-127, ADA-156 733, 4 refs.

Pukhov, V.A., Iakovlev, V.M., Zagorodnov, V.A.

**Ice coring drills, Borehole instruments, Glacier ice, Equipment, Drilling.**

40-1196

Equipment and technology for core drilling in moderately cold ice.

Bogorodskii, V.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.129-132, ADA-156 733, 5 refs.

Morev, V.A.

**Ice coring drills, Borehole instruments, Drilling fluids, Equipment, Ice drills, Temperature effects, Ice temperature.**

40-1197

Liquid fillers for bore holes in glaciers. Morev, V.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.133-135, ADA-156 733, 1 ref.  
IAkovlev, V.A.  
Drilling fluids, Boreholes, Ice drills, Glacier ice, Chemical analysis, Temperature effects, Freezing, Solutions.

40-1198

Selection of a low temperature filler for deep holes in the antarctic ice sheet. Kudriashov, B.B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.137-138, ADA-156 733, 1 ref.  
Chistiakov, V.K., Pashkevich, V.M., Petrov, V.N.  
Drilling fluids, Boreholes, Ice coring drills, Rheology, Viscosity, Freezing, Temperature, Antarctica—Vostok Station.

The development of a suitable low temperature liquid filler for the 2000 m deep hole at Vostok Station, Antarctica, is described. It is essential to maintain stability of the hole wall under increasing hydrostatic pressure and pressure. The amount of hole closure expected is primarily determined by the ice rheology and temperature as well as the duration and type of drilling. (Auth. mod.)

40-1199

New equipment and technology for deep core drilling in cold glaciers. Bogorodskii, V.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-34, International Workshop/Symposium on Ice Drilling Technology, 2nd, Calgary, Alberta, Aug. 30-31, 1982. Proceedings, p.139-140, ADA-156 733, 1 ref.  
Morev, V.A., Pukhov, V.A., IAkovlev, V.M.  
Ice coring drills, Borehole instruments, Glacier ice, Ice cores, Ice drills, Ice temperature, Temperature effects.

40-1200

Nature and history of ground ice in the Yukon—Isotope investigations. Michel, F.A., Canada. Department of Energy, Mines and Resources. Earth Physics Branch. Open file, Apr. 1985, No.85-11, 126p., With French summary. Refs. p.124-126.  
Permafrost distribution, Ground ice, Isotope analysis, Ice wedges, Drill core analysis, Moraines, Stratigraphy, Canada—Yukon Territory.

40-1201

Removal of snow-ice layers from road pavements. (Ubozka snezhno-LEDIANOGO sloia s dorozhnykh pokrytiy). Filippov, I.V., *Avtomobil'nye dorogi*, Feb. 1985, No.2, p.4, In Russian. 3 refs.  
Roads, Snowstorms, Winter maintenance, Chemical ice prevention, Ice removal, Glaze, Snowdrifts.

40-1202

Ice-jam removal near culverts. (Ustranenie zatorov l'da u vodopropusknykh trub). Tavrizov, V.M., *Avtomobil'nye dorogi*, Feb. 1985, No.2, p.4-5, In Russian.  
Naleds, Hydraulic structures, Culverts, Ice blasting, Roadbeds, Stream flow, Ice jams, Embankments.

40-1203

Calculating the requirements in machines for glaze removal. (Raschet potrebnosti v mashinakh dlia bor'by s zimnel skol'zko'stiyu). Ivanov, V.D., *Avtomobil'nye dorogi*, Feb. 1985, No.2, p.5-6, In Russian.  
Winter maintenance, Ice removal, Chemical ice prevention, Roads, Equipment.

40-1204

Performance of road graders in loose earth and snow. (Osobennosti raboty avtogreidera na rykhloem grunte i snegu). Sharipov, L.Kh., et al, *Avtomobil'nye dorogi*, May 1985, No.5, p.11-12, In Russian.  
Buzin, I.U.M., Zhulaf, V.A.  
Soil trafficability, Construction equipment, Roads, Cold weather performance, Snow depth, Trafficability.

40-1205

Bearing strength and resistance to fracturing of road pavements with stabilized soil bases. (Nesushchaia sposobnost' i treshchinostoi'kost' dorozhnykh odezhd s osnovaniami iz ukreplennykh gruntov). Markov, L.A., et al, *Avtomobil'nye dorogi*, Mar. 1985, No.3, p.7-8, In Russian.  
Kryzhanovskii, I.M., Dudkin, A.S.  
Pavements, Foundations, Soil stabilization, Roads, Cements, Settlement (structural), Frost heave, Fracturing.

40-1206

Winter drying of earth in quarries and drainage canals. (Zimniaia sushka gruntov v kar'erakh i rezervakh). Tupitsyn, N.M., *Avtomobil'nye dorogi*, Mar. 1985, No.3, p.12-13, In Russian. 3 refs.  
Swamps, Drying, Earthwork, Embankments, Trenching, Permafrost beneath structures, Artificial thawing, Mosses.

40-1207

Assignment of a reliability coefficient in computing permafrost beds for structures with purely economic accountability. Khrustalev, L.N., et al, *Soil mechanics and foundation engineering*, Mar.-Apr. 1985 (Pub. Sep. 85), 22(2), p.69-73, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 4 refs.  
Pustovolt, G.P.  
Buildings, Foundations, Permafrost bases, Bearing strength, Analysis (mathematics), Cost analysis.

40-1208

Computer-aided mathematical modeling of the steam-thaw process of permafrost. Minkin, M.A., et al, *Soil mechanics and foundation engineering*, Mar.-Apr. 1985 (Pub. Sep. 85), 22(2), p.73-78, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 7 refs.  
Dmitrieva, S.P.  
Computerized simulation, Permafrost thermal properties, Artificial thawing, Mathematical models.

40-1209

Temporal and spatial distributions of Arctic sea ice thickness and pressure ridging statistics. Garrett, R.P., *U.S. Navy. Naval Postgraduate School, Monterey, California. Report*, Mar. 1985, NPS 68-85-009, 161p., M.S. Thesis. Refs. p.146-150.  
Sea ice distribution, Ice cover thickness, Pressure ridges, Acoustic measurement, Polynyas, Ice deformation, Statistical analysis, Maps, Arctic Ocean.

40-1210

Compendium of Arctic environmental information. Welsh, J.P., et al, *U.S. Naval Ocean Research and Development Activity. NORDA technical note*, Sep. 1984, No.290, 199p., Refs. passim.  
Sea ice distribution, Acoustic measurement, Oceanography, Remote sensing, Submarines, Logistics, Cold weather survival, Arctic Ocean.

40-1211

Temperature field of soils. Regularities of development and soil-forming role. (Temperaturnoe pole pochv. Zakonomernosti razvitiia i pochvoobrazuiushchaia rol'). Ostroumov, V.E., et al, Moscow, Nauka, 1985, 133p., In Russian with abridged English table of contents enclosed. Refs. p.175-183.  
Makeev, O.V.  
Soil formation, Soil temperature, Heat flux, Soil freezing, Heat transfer, Freeze thaw cycles, Mass transfer, Soil structure, Soil composition, Snow cover effect, Vegetation factors, Slope orientation, Geocryology.

40-1212

Ice fracture under impact loading. (Razrushenie l'da pri udarnykh vzaimodelstviakh). Epifanov, V.P., *Akademiia nauk SSSR. Doklady*, 1985, 284(3), p.599-603, In Russian. 4 refs.  
Ice physics, Ice strength, Impact strength, Ice cover, Laboratory techniques, Models, Test equipment.

40-1213

Automation of geocryological investigations. (Automatizatsiia geokriologicheskikh issledovanii). Tsubul'skii, V.R., Novosibirsk, Nauka, 1985, 145p., In Russian with abridged English table of contents enclosed. Refs. p.141-144.  
Standards, Measuring instruments, Automation, Equipment, Geocryology, Glaciology, Permafrost, Research projects.

40-1214

Vegetational cover of the West Siberian Plain. (Rastitel'nyi pokrov Zapadno-Sibirskoi ravniny). Il'ina, I.S., et al, Novosibirsk, Nauka, 1985, 251p., In Russian with abridged English table of contents enclosed. Refs. p.211-221.  
Forest tundra, Tundra, Swamps, Plant ecology, Plant physiology, Arctic landscapes, Ecosystems, Subarctic landscapes, Cryogenic soils, Meadow soils.

40-1215

House plants and winter gardens in the Far North. (Tsvety v inter'ere i zimnie sady na Krai'nom Severe). Kozupceva, T.A., et al, Leningrad, Nauka, 1985, 120p., In Russian with abridged English table of contents enclosed. 36 refs.  
Leshteva, A.A., Miller, S.A.  
Solar radiation, Residential buildings, Plants (botany), Plant physiology, Soils, Polar regions.

40-1216

Dynamics of conditions for fog formation in the Yeniseysk airport during the cold season. (K voprosu o dinamike uslovii obrazovaniia tumana v aeroportu Eniseisk v osenne-zimnii period). Gantsevich, L.I., *Zapadno-sibirskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.64, p.71-76, In Russian. 12 refs.  
Airports, Fog formation, Ice fog, Electric power, Ice-bound rivers, Hydraulic structures, Dams, Environmental impact.

40-1217

Analyzing the visibility-impairing conditions during snowfalls and visibility forecasts for the Kolpashovo airport. (Analiz uslovii ukhudsheniia vidimosti v snegopadakh i prognoz vidimosti v aeroportu Kolpashovo). Zenkevich, D.I., *Zapadno-sibirskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.64, p.77-84, In Russian. 7 refs.  
Airports, Snowfall, Visibility, Analysis (mathematics).

40-1218

Regression method of forecasting fog conditions at the Yeniseysk airport during the cold season. (Regressiionnyi metod prognoza tumana v aeroportu Eniseisk v osenne-zimnii period). Gantsevich, L.I., *Zapadno-sibirskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.64, p.84-92, In Russian. 10 refs.  
Fog, Dams, Ice fog, Airports, Environmental impact, USSR—Yenisey River.

40-1219

Tests with pre-wetted salt in the winters 1980/81-1983/84. (Prov med befuktat salt vintrarna, 1980/81-1983/84). Gustafson, K., Sweden. Statens väg- och trafikinstitut. Rapport, 1985, No.299, 53p., In Swedish with English summary. 9 refs.  
Road icing, Salting, Chemical ice prevention, Water content, Tests.

40-1220

Character and implications of new ice gouges in eastern Harrison Bay, Beaufort Sea. Rearie, D.M., *U.S. Geological Survey. Circular*, 1985, No.945, p.99-100, 4 refs.  
Ice scoring, Ocean bottom, Bottom topography, Bottom sediment, Sea ice, Beaufort Sea.

40-1221

When the ice breaks. Sugden, D., et al, *Geographical magazine*, Apr. 1985, 57(4), p.185-188.  
Clapperton, C.  
Ice breakup, River ice, Floating ice, Glacial hydrology, Ice dams, Glacial lakes, Glacial rivers, Floods, Greenland.

40-1222

Pebble fabric in an ice-raftered diamictite. Domack, E.W., et al, *Journal of geology*, Sep. 1985, 93(5), p.577-591, Refs. p.589-591.  
Lawson, D.E.  
Ice rafting, Glacial deposits, Sedimentation, Moraines, Stratigraphy, Fossils, Origin, Glacier flow.  
Pebble fabric studies on ice-raftered diamictites have been limited to general observations, with authors noting preferences toward vertical, random, or horizontal orientations. To clarify such observations, pebble fabric data were collected from a fossiliferous diamictite of late Pleistocene age located on Whidbey Island, Washington. The ice-raftered origin of this unit is supported by several independent characteristics including *in situ* macrofauna and microfauna, conformity with subaqueous lithofacies containing dropstones, lower bulk densities and higher void ratios than associated tills, soft sediment deformation structures suggestive of iceberg dumping, textural gradations, and facies relationships. Analysis using the eigenvalue method indicates

that ice-rafted fabrics are nearly random with little consistency of vector orientations between sites and without any relationship to the probable direction of glacial flow. The weak fabric is mainly the product of settling through the water column and impact with, or penetration of, the bed. Samples that possess a weak preferred low axis orientation with a low angle of dip, including those from laminated muds, can best be explained by the intermittent effects of bottom currents, a resistant substrate at the time of deposition and post-depositional flowage. Comparisons of pebble fabrics from basal tills, recent sediment flow deposits, and basal, debris-laden ice of an active glacier demonstrate that the ice-rafted fabrics are distinct from those of basal ice and till but are quite similar to those of sediment flow diamictites. Ice-rafted diamictites appear, however, to contain a greater number of elongate stones, with long axis plunge angles exceeding 45 deg. than other glauconitic diamictites.

#### 40-1223

**Forward-scattering corrected extinction by nonspherical particles.**

Bohren, C.F., et al, *Applied optics*, Apr. 1, 1985, 24(7), MP 1958, p.1023-1029. For another source see 39-2966. 16 refs.

Koh, G.

**Snowflakes, Light scattering, Snow crystal structure, Particles, Ice needles, Analysis (mathematics).**

Measured extinction of light by particles, especially those larger than the wavelength of the light illuminating them, must be corrected for forward-scattered light collected by the detector. Near-forward scattering by arbitrary nonspherical particles is, according to Fraunhofer diffraction theory, more sharply peaked than that by spheres of equal projected area. The difference between scattering by a nonspherical particle and that by an equal-area sphere is greater the more diffusely the particle's projected area is distributed about its centroid. Snowflakes are an example of large atmospheric particles that are often highly nonspherical. Calculations of the forward-scattering correction to extinction by ice needles have been made under the assumption that they can be approximated as randomly oriented prolate spheroids (aspect ratio 10:1). The correction factor can be as much as 20% less than that for equal-area spheres depending on the detector's acceptance angle and the wavelength. Randomly oriented oblate-spheroids scatter more nearly like equal-area spheres.

#### 40-1224

**Theory of natural convection in snow.**

Powers, D., et al, *Journal of geophysical research*, Oct. 20, 1985, 90(D6), MP 1957, p.10,641-10,649, 31 refs.

O'Neill, R., Colbeck, S.C.

**Snow physics, Convection, Thermal conductivity, Heat transfer, Mass transfer, Phase transformations, Porous materials, Water vapor, Latent heat, Mathematical models, Theories.**

Buoyancy-driven flows of air in snow are modeled including the effects of phase change and inclination. Phase change between water vapor and ice is important because of latent heat terms in the energy equation. Upper boundaries of the snow are taken as either permeable or impermeable, with temperature or heat flux specified at the lower boundary. When the ratio of thermal to mass diffusivity is greater than 1, phase change intensifies convection. When this ratio is less than 1, phase change damps convection. The effects of permeable top and uniform heat flux bottom boundary conditions on heat transfer are quantified and discussed. A Rayleigh number  $Ra$  is defined, which is the Rayleigh number and  $\epsilon$  refers to the critical value for the onset of Benard convection. The slope of each function depends only on the thermal boundary condition at the lower boundary. If a snow cover is inclined, Rayleigh convection occurs for any nonzero Rayleigh number. Velocity profiles for flows in inclined layers with permeable tops are derived, and it is found that velocity is proportional to  $Ra \sin \phi$ , where  $\phi$  is the angle of inclination from the horizontal. The numerical results for different boundary conditions compare reasonably well with experimental results from the literature.

#### 40-1225

**Coupling between melting and convective air motions in stratiform clouds.**

Mason, G.W.S., et al, *Journal of geophysical research*, Oct. 20, 1985, 90(D6), p.10,659-10,666, 10 refs.

Stewart, R.E.

**Supercooled clouds, Snowflakes, Snow melting, Heat transfer, Convection, Air temperature, Cooling.**

#### 40-1226

**Full-scale freeze-thaw experiments.** [Essais en vraie grandeur au gel et dégel].

Dysli, M., et al, *Strasse und Verkehr*, Oct. 1985, 71(10), p.510-513, In French with German summary 7 refs.

Despond, J.M.

**Freeze thaw tests, Winter maintenance, Road maintenance.**

#### 40-1227

**Frost heave of frozen soils.** [Gonflement des sols gelés].

Blanchard, D., et al, *Académie des sciences, Paris. Comptes rendus hebdomadaires des séances. Série 2*, Apr. 14, 1985, 300(14), p.637-639, In French with English summary.

Fremont, M.

**Frost heave, Thermal effects, Mathematical models, Frozen ground mechanics.**

#### 40-1228

**Snow avalanches and avalanche danger areas in the Kemerovo region.** [Snezhnye laviny i lavinopasnye raiony Kemerovskoi oblasti].

Chubenko, A.G., et al, *Zapadno-sibirskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.65, p.36-45, In Russian. 10 refs.

Kaminskii, A.G.

**Avalanche engineering, Avalanche formation, Avalanche triggering, Snow depth, Snow water content, Snowstorms, Snow accumulation, Charts, Meteorological data.**

#### 40-1229

**Calculation of ice-cover albedo on rivers and water reservoirs.** [K raschetu al'bedo ledianogo pokrova rek i vodostoyov].

Ergin, V.P., *Zapadno-sibirskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.65, p.45-57, In Russian. 18 refs.

**Icebound rivers, Icebound lakes, Albedo, Mapping, Charts.**

#### 40-1230

**Woody plants introduced in Siberia (Abelia-Ligustrum).** [Drevesnye rasteniia-introduitsenty Sibiri (Abelia-Ligustrum)].

Vstovskaia, T.N., Novosibirsk, Nauka, 1985, 279p., In Russian with English table of contents enclosed.

**Introduced plants, Acclimatization, Cryogenic soils, Permafrost thermal properties, Plant ecology, Plant physiology, Charts.**

#### 40-1231

**Scientific results of the polar expedition made in the years 1910-1915 on the icebreakers "Tatmyr" and "Vaigach".** [Nauchnye rezultaty polarnoi ekspeditsii na ledokolakh "Tatmyr" i "Vaigach" v 1910-1915 godakh].

Evgenov, N.I., et al, Leningrad, Nauka, 1985, 184p., In Russian with abridged English table of contents enclosed. Kd's p.167-182.

Kupetskil, V.N.

**Shores, Expeditions, Ice navigation, Icebreakers, Photography, Research projects, Mapping, Meteorology, Glaciology, Oceanography, Geology, Arctic Ocean.**

#### 40-1232

**Character of falling snow—for the calculation of radio wave attenuation at snowfall.**

Nishitsuji, A., et al, *Hokkaido University, Sapporo, Japan. Research Institute of Applied Electronics. Monograph series*, 1971, No.19, p.45-61, 6 refs.

Matsumoto, A.

**Radio waves, Attenuation, Snowfall, Snowflakes.**

**Wave propagation, Falling bodies.**

#### 40-1233

**Monitoring ice, including snow, on lakes.**

Adams, W.P., Applied research in the Canadian North. Edited by F. Duerden. Annual Applied Geography Conference, 6th, Oct. 12-15, 1983, Proceedings, Toronto, Ontario, Ryerson Polytechnical Institute, [1983], p.135-162, 24 refs.

**Lake ice, Snow cover effect, Ice conditions, Ice surveys, Snow surveys, Canada.**

#### 40-1234

**Short term environmental effects of surface disposal of waste drilling fluids: Panarctic et al surface disposal experiment, Ellef Ringnes Island, N.W.T.**

French, H.M., Applied research in the Canadian North. Edited by F. Duerden. Annual Applied Geography Conference, 6th, Oct. 12-15, 1983, Proceedings, Toronto, Ontario, Ryerson Polytechnical Institute, [1983], p.163-200, 21 refs.

**Waste disposal, Permafrost, Drilling fluids, Topographic features, Drill core analysis, Ice lenses, Surface water, Vegetation, Experimentation.**

#### 40-1235

**Snow control structures.**

Esch, D.C., Alaska Department of Transportation and Public Facilities. Research notes, Aug. 1984, 4(2), 2p.

**Snow removal, Structures, Road maintenance, Roofs, Snow fences, Blowing snow, Wind velocity, Countermeasures, Snow accumulation.**

#### 40-1236

**Attack on concrete.** [Angriff auf Beton].

Knöfel, D., *Bautenschutz und Bausanierung*, 1980, 3(4), p.122-126, In German. 3 refs.

**Concrete durability, Corrosion, Frost action, Freeze thaw cycles, Erosion, Construction materials, Seepage.**

#### 40-1237

**Sediment transport under ice cover.**

Lau, Y.L., et al, *Journal of hydraulic engineering*, June 1985, 111(6), p.934-950, 16 refs.

Krishnappan, B.G.

**Sediment transport, Ice cover effect, Water flow, Friction, River flow, Flow rate, Analysis (mathematics), Experimentation, Forecasting.**

#### 40-1238

**Technical and economic evaluation of ship-shaped floating production and storage systems for the Canadian east coast offshore.**

Peggs, J.K., et al, *Journal of Canadian petroleum technology*, Sep.-Oct. 1985, 24(5), p.24-31, 4 refs.

Hutton, K., Rainey, R.

**Offshore structures, Petroleum industry, Ice conditions, Moorings, Ships, Buoyancy, Sea ice distribution, Ocean waves, Ocean currents.**

#### 40-1239

**Artificial island construction in an Arctic river—the Norman Wells production islands.**

Hunter, J.S., et al, *Journal of Canadian petroleum technology*, Sep.-Oct. 1985, 24(5), p.32-36.

Tibbatts, R.M.

**Artificial islands, Ice loads, River ice, Water level, Water waves, River flow, Canada—Northwest Territories—Mackenzie River.**

#### 40-1240

**Maintaining frosty facilities.**

Reed, S.C., et al, *Operations forum*, Feb. 1985, MP 1949, p.9-15, 6 refs.

Niedringhaus, L.

**Waste treatment, Water treatment, Cold weather operation, Municipal engineering, Maintenance, Flow measurement, Sedimentation, Damage, Sludges.**

#### 40-1241

**Frost- and salt-resistant construction materials.** [Zur Frost-Tausalzbeständigkeit von Baustoffen].

Gragger, F., *Kommunalwirtschaft*, 1984, No.8, p.243-246, In German.

**Frost resistance, Pavements, Construction materials, Salting, Roads, Freeze thaw tests, Concrete durability.**

#### 40-1242

**Snow and weather situation and avalanches in the Alps, Oct. 1984-Jan. 1985.** [Situation nivométrologique et avalanches dans les Alpes, Octobre 1984 à Janvier 1985].

David, P., et al, *Neige et avalanches*, Mar. 1985, No.36, p.3-32, In French.

König-Barde, J., Pahaut, E., Villecroise, M.

**Snow accumulation, Weather observations, Avalanches, Switzerland—Alps.**

#### 40-1243

**Improved projectiles for avalanche guns.** [Améliorations du projectile de l'avalancheur].

Perroud, P., *Neige et avalanches*, Mar. 1985, No.36, p.33-36, In French.

**Avalanche triggering, Explosion effects, Experimentation.**

#### 40-1244

**Prospects for a new generation of avalanche protection structures.** [Perspectives pour une nouvelle génération d'ouvrages paravalanches].

Tailander, J.M., *Neige et avalanches*, Mar. 1985, No.36, p.37-44, In French.

**Avalanche formation, Snow fences, Protection, Structures, Countermeasures.**

#### 40-1245

**Snow cover surveys, 1983-84.**

U.S. Geological Survey, Albany, NY, Aug. 1984, 17p.

**Snow surveys, Snow cover distribution, Snow depth, Snow water equivalent, Statistical analysis, United States—New York.**

#### 40-1246

**Distribution of clay minerals in the suspended and bottom sediments from the northern Bering Sea shelf area, Alaska.**

Moser, F.C., et al, *U.S. Geological Survey Bulletin*, 1984, No.1624, 19p. 30 refs.

Hein, J.R.

**Suspended sediments, Bottom sediment, Clay minerals, Distribution, Water pollution, Oil spills, Bering Sea.**

40-1247

Remote camps for U.S. field projects in Antarctica. Splettstoesser, J. *Antarctic journal of the United States*, June 1985, 20(2), p.1-6, 12 refs. Cold weather construction, Logistics, Transportation, Low temperature research.

An outline is given of the logistics of establishing modern antarctic field camps to accommodate varying scientific group sizes for 40-60 days. The establishing procedure begins with a proposed general program, proceeds through approval, site selection, specific project proposals, construction, scheduling, delivering scientists, assistants, and equipment to the site, and then retrieving all when the field program is completed. A brief historical review shows changes in equipment evolving since the early part of the century and a fairly constant logistics plan.

40-1248

Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia. (Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri). Vorob'ev, V.V., ed. Irkutsk, 1984, 192p., In Russian. For selected papers see 40-1249 through 40-1258. Refs. passim. Plastinin, L.A., ed. Taiga, Aerial surveys, Spaceborne photography, Route surveys, Remote sensing, LANDSAT, Monitors, Human factors, Mapping, Environmental protection, Naleds, Snow cover distribution, Hydrology.

40-1249

Satellite monitoring (present state, problems, prospects). (Aerokosmicheskii monitoring (sostoianie, problemy, perspektivy)). Knizhnikov, I.U.F., Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.3-10, In Russian. 3 refs. Aerial surveys, Spaceborne photography, Remote sensing, LANDSAT, Monitors, Environmental protection, Human factors.

40-1250

Satellite monitoring and combined investigations of geosystem dynamics. (Aerokosmicheskii monitoring i kompleksnye issledovaniia dinamiki geosistemy). Plastinin, L.A., Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.10-17, In Russian. 7 refs. Spaceborne photography, LANDSAT, Monitors, Photointerpretation, Mapping, Landscape types, Classifications.

40-1251

Reflection of the dynamics of natural processes in the atlas "Interpretation of multizonal satellite photographs". (Otobrazhenie dinamiki prirodnykh protsessov Sibiri v atlase "Deshifirovanie mnogoazonal'nykh aerokosmicheskikh snimkov"). Kravtsova, V.I., Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.27-34, In Russian. 3 refs. Thermokarst, Spaceborne photography, Alasay, Photointerpretation, Mapping, Permafrost distribution, Permafrost hydrology.

40-1252

Satellite information in studying nival and glacial relief-forming processes in mountainous BAM areas (northern Transbaikalia). (Aerokosmicheskaiia informatsiia v izucheni nival'no-gliatsial'nykh rel'efoobrazuiushchikh protsessov gornykh raionov BAMA (Severnoe Zabaikal'e)). Plastinin, L.A., et al, Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.35-41, In Russian. 9 refs. Mangazeev, V.I.A., Kolomytsev, I.S. Alpine landscapes, Snow cover distribution, Nivation, Nival relief, Baykal Amur railroad, Frost action, Topographic effects.

40-1253

Cartographic evaluation of conditions for economic development of shores of the Angara water reservoir. (Kartograficheskaia otsenka uslovii osvoeniia poberezhii Angarskikh vodokhranilishch). Trzhtainskii, I.U.B., Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.42-50, In Russian. 11 refs. Permafrost beneath rivers, Shore erosion, Solifluction, Thermokarst, Slope processes, Lakes, Mapping, Charts.

40-1254

Application of remote sensing methods in studying landscape structures and dynamics of baikal mountain areas in northern Transbaikalia. (Primenenie distantsionnykh metodov v izucheni landshaftnoi struktury i dinamiki gol'tsov Severnogo Zabaikal'ia). Pliusanin, V.M., Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.51-58, In Russian. 9 refs. Aerial surveys, Permafrost distribution, Spaceborne photography, Alpine tundra, Alpine landscapes, Deserts, Rock streams, Avalanches, Frost action, Topographic effects.

40-1255

Space and land surveying methods of studying the dynamics of ice processes on Lake Baykal. (Aerokosmicheskie i nazemnye metody issledovaniia dinamiki ledovykh protsessov na Baikale). Sitnikova, G.V., et al, Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.72-81, In Russian. 3 refs. Furman, M.Sh., IAnter, N.N. Lake ice, Ice cover thickness, Ice conditions, Ice (construction material), Ice crossings, Hydraulic structures, Ice pressure, Ice surveys, Spaceborne photography, Remote sensing.

40-1256

Dynamic indices in the naled catalog for the BAM zone, according to aerial photographs. (Dinamicheskie pokazateli v kataloge naledel zony BAM podgotovlennye po materialam aerofotos' emok). Abakumenko, A.E., Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.82-92, In Russian. 4 refs. Naleds, Aerial surveys, River basins, Photointerpretation, Mapping, Railroads, Embankments.

40-1257

Studying and mapping taiga biogeocenoses from satellite surveys. (Opyt izucheniia i kartografirovaniia taizhnykh biogeotsenozov s primeneniem aerokosmicheskikh s' emok). Konstantinov, V.D., et al, Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.107-119, In Russian. 7 refs. Gorozhankina, S.M. Taiga, Spaceborne photography, Cryogenic soils, Mapping, Forest soils, Soil water, Humidity, Vegetation.

40-1258

Regionalization of West Siberian swamps from satellite photographs. (Raionirovanie bolot Zapadnoi Sibiri na osnove kosmosnimkov). Gorozhankina, S.M., Aerokosmicheskie i nazemnye issledovaniia dinamiki prirodnykh protsessov Sibiri (Aerial, spaceborne and land surveys of the dynamics of natural processes in Siberia) edited by V.V. Vorob'ev and L.A. Plastinin, Irkutsk, 1984, p.119-131, In Russian. 15 refs. Spaceborne photography, Photointerpretation, Swamps, Snow cover distribution, Mapping, Charts.

40-1259

Effects of cryochemical processes in the glaciers and permafrost of Spitsbergen. Pulina, M., *Polish polar research*, 1984, 5(3-4), p.137-163, With Russian and Polish summaries. 21 refs. Glacier ice, Continuous permafrost, Meltwater, Water flow, Seasonal variations, Glacial hydrology, Permafrost hydrology, Hydrothermal processes, Water chemistry.

40-1260

Ice mass loss in the front zone of the Verenskii Glacier from 1957 to 1978 determined using terrestrial photogrammetry. Jania, J., et al, *Polish polar research*, 1984, 5(3-4), p.207-216, With Russian and Polish summaries. 20 refs. Lipert, C., Mechliński, Z. Photogrammetric surveys, Glacier ice, Ice volume, Glacier ablation, Glacier oscillation, Mapping, Ice cover thickness.

40-1261

Geophysical investigations of the thickness of the ice and base of the Hans Glacier in the area of the Hornsund Fjord in Spitsbergen. Koblański, A., et al, *Polish polar research*, 1984, 5(3-4), p.283-292, With Russian and Polish summaries. 3 refs. Maloszewski, S., Śliz, J. Mountain glaciers, Glacier ice, Ice cover thickness, Gravimetric prospecting, Magnetic surveys.

40-1262

Water in the Hornsund glaciers in the light of isotopic investigations. Grabczak, J., et al, *Polish polar research*, 1984, 5(3-4), p.295-317, With Russian and Polish summaries. 15 refs. Rózkowski, A. Snow cover distribution, Glacier ice, Glacier ablation, Meltwater, Isotope analysis, Composition, Seasonal variations, Glacial hydrology.

40-1263

Pre-Quaternary glaciations of West Antarctica: evidence from the South Shetland Islands. Birkenmajer, K., *Polish polar research*, 1984, 5(3-4), p.319-329, With Russian and Polish summaries. 30 refs. Glaciation, Paleoclimatology, Antarctica—West Antarctica, Antarctica—King George Island. Three major pre-Quaternary glaciations have been recognized on King George Island. The oldest is the Melville Glaciation evidence by fossiliferous glaciomarine sediments. Presence of numerous belemnites and Cretaceous calcareous nannoplankton suggested at first a late Cretaceous age, but there is an increasing evidence that these Cretaceous fossils are recycled and occur in late Tertiary (Miocene) strata. Two glaciations separated with an interglacial have been recognized in a thick Pliocene sequence of lavas and sediments. The older Polonez Glaciation is represented by continental-type tillites succeeded by glaciomarine sediments with *Chlamys anderssoni* fauna. Acidic volcanic activity, coarse-clastic sedimentation and subaerial erosion characterize a mid-Pliocene Wesale interglacial succeeding the Polonez Glaciation. Andesitic lavas and lahars, cut by glacially eroded valleys with strongly diagenized tillites, represent the youngest, late-Pliocene Legru Glaciation. (Auth.)

40-1264

Measuring ice forces on fishing vessels. (Mesurage des charges de glace sur la coque des bateaux de pêche). Daley, C., et al, *Canada. Department of Transport. Report*, July 1984, TP 6045F, 17p., In French with English summary. Harwood, M., Perchanok, M. Ice loads, Ships, Shear stress, Sea ice, Ice pressure.

40-1265

Analysis of Arctic haze scattering and aerosol data obtained during AGASP. Patterson, E.M., et al, *Georgia Institute of Technology, Atlanta. School of Geophysical Sciences. Report*, May 1, 1985, 41p., 21 refs. Grams, G.W. Haze, Aerosols, Scattering, Particle size distribution.

40-1266

Ice conditions in the Greenland waters, 1972. *Denmark. Meteorologisk institut. Publikationer. Ar-bøger*, Copenhagen, 1984, 11p. + maps, In English and Danish. Sea ice distribution, Ice conditions, Maps, Charts, Seasonal variations, Greenland.

40-1267

Heat transmission with steam and hot water. Aamot, H.W.C., et al. MP 1956. Cogeneration district heating applications. Edited by I. Öliker, New York. American Society of Mechanical Engineers, 1978. p.17-23. Presented at the Winter Annual Meeting of the American Society of Mechanical Engineers, San Francisco, California, December 10-15, 1978. 6 refs. Phetteplace, G.

Heat transmission, Water pipes, Water temperature, Fluid flow, Heat flux, Heat loss, Flow rate, Meteorological factors, Pressure, Computer applications, Design.

A methodology for design of heat transmission lines is presented. It is based on finding the pipe diameter which yields the lowest total cost. Cost factors considered are cost of energy lost in the form of heat, cost of energy to produce pumping work, and cost of capital to construct the system. The methodology has been developed into a computer code which allows for rapid analysis of alternatives. Results are presented, based on certain assumptions, for various parameters of interest.

40-1268

Symposium on plasticity of ice.

Hondoh, T., *Seppyo*, Mar. 1985, 47(1), p.1-2, In Japanese with English summary. 2 refs.

Ice plasticity, Ice physics, Snow physics, Ice creep, Meetings, Basal sliding, Ice crystal structure, Rheology, Compressive properties.

40-1269

Historical survey of research works on the plasticity of ice from 1888 to 1978.

Nakamura, T., *Seppyo*, Mar. 1985, 47(1), p.3-13, In Japanese. 40 refs.

Ice plasticity, Ice creep, Ice crystal structure, Stress strain diagrams, Ice mechanics, Ice deformation, Shear stress, Shear strain.

40-1270

Anisotropy of deformation and behavior of dislocation in ice single crystals.

Fukuda, A., *Seppyo*, Mar. 1985, 47(1), p.15-20, In Japanese. 12 refs.

Ice deformation, Ice crystal structure, Anisotropy, Dislocations (materials), X ray diffraction.

40-1271

Effects of hydrostatic pressure on the plasticity of ice. Azuma, N., *Seppyo*, Mar. 1985, 47(1), p.21-26, In Japanese. 15 refs.

Ice crystal structure, Ice plasticity, Ice deformation, Ice mechanics, Ice creep, Loads (forces), Pressure, Stresses.

40-1272

Traction characteristics of snow tires with anti-skid chains.

Shimoda, S., et al., *Seppyo*, Mar. 1985, 47(1), p.27-36, In Japanese with English summary. 5 refs.

Ishibashi, T., Tamura, T., Kamada, T. Rubber snow friction, Traction, Tires, Snow compaction, Road icing, Surface properties, Skid resistance.

40-1273

Some effects of friction on ice forces subjected to structures with vertical faces.

Kato, K., *Seppyo*, Mar. 1985, 47(1), p.37-44, In Japanese with English summary. 20 refs.

Ice loads, Ice friction, Offshore structures, Ice pressure, Coatings, Tests.

40-1274

Second worst year for ice. *Offshore resources*, May-June 1985, 3(2/3), p.7, 19.

Offshore drilling, Ice conditions, Sea ice distribution, Wells.

40-1275

Berg slicer cuts problems down to a manageable size. *Offshore resources*, May-June 1985, 3(2/3), p.9.

Icebergs, Ice cutting, Electric heating, Cables (ropes).

40-1276

New sea ice information system ready. *Offshore resources*, May-June 1985, 3(2/3), p.12-13.

Sea ice distribution, Ice conditions, Icebergs, Ice islands, Statistical analysis, Canada.

40-1277

Arctic caisson drilling and completion system. *Offshore resources*, May-June 1985, 3(2/3), p.18.

Offshore drilling, Caissons, Ice conditions, Offshore structures, Design criteria.

40-1278

Strategies to optimize ice storage.

Rawlings, L., *ASHRAE journal*, May 1985, 27(5), p.39-48.

Cold storage, Air conditioning, Ice refrigeration, Cost analysis, Storage tanks.

40-1279

Influence of age-hardening and strain-rate on confined compression and shear behaviour of snow.

Yong, R.N., et al., *Journal of terramechanics*, 1985, 22(1), p.37-49, 8 refs.

Metaxas, I.

Snow compression, Snow hardness, Snow density, Traction, Trafficability, Shear strength, Snow strength, Vehicles, Stress strain diagrams, Shear stress.

40-1280

Ecological aspects of winter services. [Aspetti ecologici nel servizio invernale].

Dedic, O., *Neve international*, First semester 1985, 27(2), p.25-30, In Italian with French, German and English summaries.

Snow removal, Road maintenance, Winter maintenance, Antifreezes, Environmental impact.

40-1281

Winter assistance from the point of view of traffic. [L'assistenza invernale dal punto di vista tecnico della circolazione].

Knoflach, H., *Neve international*, First semester 1985, 27(2), p.31-36, In Italian with French, German and English summaries.

Winter maintenance, Road maintenance, Snow removal, Ice removal.

40-1282

Planning winter road-cleaning service for country roads in the plain. [Sulla pianificazione del servizio di viabilità invernale lungo le strade extra urbane di pianura].

Abbruzzese, F., *Neve international*, First semester 1985, 27(2), p.37-42, 2 refs., In Italian with French, German and English summaries.

Snow removal, Ice removal, Road maintenance, Winter maintenance.

40-1283

Defense of residential areas against avalanches in the Province of Bolzano. [La difesa dalle valanghe dei centri abitati nella provincia di Bolzano].

Watschinger, E., et al., *Neve international*, First semester 1985, 27(2), p.50-53, In Italian with French, German and English summaries.

Magnò, A. Avalanche formation, Snow fences, Countermeasures, Protection.

40-1284

Soil-temperature monitoring network in Alaska. Ping, C.-L., *Agroborealis*, July 1985, 17(2), p.13-18, 14 refs.

Soil temperature, Snow cover effect, Evapotranspiration, Snow surveys, Thermal regime, Precipitation (meteorology), Wind factors, Monitors, Seasonal variations, Statistical analysis, United States—Alaska.

40-1285

Soil conservation in Alaska: past and present. Boyer, R.L., *Agroborealis*, July 1985, 17(2), p.23-30, 28 refs.

Soil conservation, Soil erosion, Revegetation, Agriculture, Wind erosion, Drainage, Countermeasures, United States—Alaska.

40-1286

Beach wildrye—characteristics and uses of a native Alaskan grass of uniquely coastal distribution.

Klebesadel, L.J., *Agroborealis*, July 1985, 17(2), p.31-38, 16 refs.

Grasses, Plant ecology, Plant physiology, Growth, Shores, United States—Alaska.

40-1287

Predicting the growth and yield of interior Alaska forests.

Packee, E.C., *Agroborealis*, July 1985, 17(2), p.49-57, 26 refs.

Forestry, Growth, Forecasting, Plant physiology, United States—Alaska.

40-1288

Mycorrhizae: a review of the importance of fungi from high-latitude forests of Alaska.

Laursen, G.A., *Agroborealis*, July 1985, 17(2), p.58-66, 28 refs.

Fungi, Forestry, Trees (plants), United States—Alaska.

40-1289

Workshop on Permafrost Geophysics, Golden, Colorado, 23-24 October 1984.

Brown, J., ed., *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1985, SR 85-05, 113p., ADA-157 485, Refs. passim. For individual papers see 40-1290 through 40-1308.

Metz, M.C., ed., Hockstra, P., ed.

Permafrost physics, Geophysical surveys, Permafrost distribution, Subsea permafrost, Boreholes, Well logging, Meetings, Permafrost thermal properties, Oil wells.

40-1290

Dielectric studies of permafrost using cross-borehole VHF pulse propagation.

Arcone, S.A., et al., *U.S. Army Cold Regions Research and Engineering Laboratory*, Special report, May 1985, No.85-05, MP 1951, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984.

Proceedings, p.3-5, ADA-157 485, 1 ref.

Delaney, A.J.

Permafrost physics, Dielectric properties, Boreholes, Ground ice, Electromagnetic properties, Radar echoes, Wave propagation, Soil structure, Permafrost thermal properties.

40-1291

Digital information system for delineation of discontinuous permafrost.

Granberg, H.B., *U.S. Army Cold Regions Research and Engineering Laboratory*, Special report, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984.

Proceedings, p.11-12, ADA-157 485, 6 refs.

Permafrost distribution, Discontinuous permafrost, Snow cover distribution, Heat balance, Snow accumulation, Forecasting, Computer applications.

40-1292

Thermal properties from borehole heating: experience in the Canadian Beaufort Sea, 1984.

Harrison, W.D., et al., *U.S. Army Cold Regions Research and Engineering Laboratory*, Special report, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984.

Proceedings, p.13-14, ADA-157 485.

Morack, J.L.

Subsea permafrost, Offshore drilling, Boreholes, Permafrost thermal properties, Soil temperature, Ground ice, Beaufort Sea.

40-1293

Medium scale maps of permafrost and ground ice conditions, Tuktoyaktuk and Illisarvik areas, western arctic coast, Canada.

Heginbottom, J.A., *U.S. Army Cold Regions Research and Engineering Laboratory*, Special report, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984.

Proceedings, p.15-18, ADA-157 485, 2 refs.

Permafrost distribution, Ground ice, Geology, Engineering geology, Ice wedges, Sediments, Maps, Canada.

40-1294

Permafrost distribution in northern Canada: interpretation of well logs.

Judge, A., et al., *U.S. Army Cold Regions Research and Engineering Laboratory*, Special report, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984.

Proceedings, p.19-25, ADA-157 485, 11 refs.

Taylor, A.

Permafrost distribution, Ground ice, Well logging, Permafrost thickness, Permafrost depth, Ice conditions, Canada.

40-1295

Impulse radar sounding of frozen ground.

Kovacs, A., et al., *U.S. Army Cold Regions Research and Engineering Laboratory*, Special report, May 1985, No.85-05, MP 1952, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984.

Proceedings, p.28-40, ADA-157 485, 1 ref.

Morey, R.M.

Frozen ground physics, Radar echoes, Ground ice, Ice detection, Sounding, Pipelines, Pingos, Electromagnetic prospecting, Ice volume.

40-1296

Suggested legend terminology for permafrost mapping.

Kreig, R.A., *U.S. Army Cold Regions Research and Engineering Laboratory*, Special report, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984.

Proceedings, p.41-47, ADA-157 485, 9 refs.

Permafrost distribution, Frozen ground, Terminology, Mapping.

- 40-1297**  
Velocity-depth structure of offshore permafrost, Canadian Beaufort Sea.  
MacAulay, H.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.48-50, ADA-157 485, 2 refs.  
Pullan, S.E., Hunter, J.A.  
Permafrost structure, Subsea permafrost, Ground ice, Ice volume, Refraction.
- 40-1298**  
Shallow geophysical borehole logging in Permafrost: a case history.  
Miller, R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.51-52, ADA-157 485.  
Permafrost physics, Well logging, Boreholes, Pipelines.
- 40-1299**  
Analysis of wide-angle reflection and refraction measurements.  
Morey, R.M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, MP 1953, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.53-60, ADA-157 485, 6 refs.  
Kovacs, A.  
Radar echoes, Subsurface investigations, Dielectric properties, Reflection, Refraction, Mathematical models, Wave propagation.
- 40-1300**  
Some aspects of interpreting seismic data for information on shallow subsea permafrost.  
Neave, K.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, MP 1954, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.61-65, ADA-157 485, 6 refs.  
Sellmann, P.V.  
Subsea permafrost, Seismic surveys, Permafrost distribution, Seismic refraction, Seismic velocity, Permafrost depth.
- 40-1301**  
Permafrost temperature measurements in an Alaskan transect; preliminary results.  
Osterkamp, T.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.66-67, ADA-157 485.  
Gosink, J.P., Kawasaki, K.  
Permafrost thermal properties, Frozen ground temperature, Pipelines, Roads, United States—Alaska.
- 40-1302**  
Well logging in permafrost.  
Peterson, J.K., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.68-70, ADA-157 485, 2 refs.  
Kawasaki, K., Osterkamp, T.E.  
Well logging, Permafrost physics, Soil water, Oil wells, Gamma irradiation.
- 40-1303**  
Monitoring permafrost ground conditions with Ground Probing Radar (G.P.R.).  
Pilon, J.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.74-90, ADA-157 485, 11 refs.  
Henderson, J.D., Sartorelli, A.N., Judge, A.  
Permafrost depth, Permafrost thickness, Electromagnetic prospecting, Ground ice, Permafrost thermal properties, Permafrost distribution, Electrical resistivity, Sounding, Mapping.
- 40-1305**  
Galvanic methods for mapping resistive seabed features.  
Sellmann, P.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, MP 1955, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.91-92, ADA-157 485.  
Delaney, A., Arcone, S.A.  
Subsea permafrost, Permafrost physics, Ground ice, Cables (ropes), Mapping, Sea water, Salinity.
- 40-1306**  
Obtaining precise temperature measurements in abandoned offshore petroleum exploration wells.  
Taylor, A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.95-99, ADA-157 485, 3 refs.  
Judge, A.  
Offshore structures, Oil wells, Soil temperature, Acoustic measurement, Temperature measurement, Offshore drilling, Telemetering equipment.
- 40-1307**  
Unfrozen permafrost and other taliks.  
Van Everdingen, R.O., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.101-105, ADA-157 485, 2 refs.  
Taliks, Permafrost physics, Terminology, Seasonal freeze thaw, Freezing points, Ground ice, Salinity.
- 40-1308**  
Transient electromagnetic detection of subsea permafrost.  
Walker, G.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, No.85-05, Workshop on Permafrost Geophysics, Golden, Colorado, Oct. 23-24, 1984. Proceedings, p.106-108, ADA-157 485, 5 refs.  
Kawasaki, K., Osterkamp, T.E.  
Subsea permafrost, Electromagnetic prospecting, Permafrost thickness, Salinity, Sounding, Detection.
- 40-1309**  
1st Antarctic Expedition (ANT I) Dec. 27, 1982-Apr. 23, 1983. [1. Antarktisexpedition (ANT I), 27. Dezember 1982-23. April 1983].  
Hempel, G., ed, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, 1983, No.14, 141p., In German with extended English summary.  
Ships, Logistics, Expeditions.  
Three primary purposes of the voyage were to resupply Neumayer Station, conduct sea trials for *Polarstern*, and manage a multi-discipline research program. Crew training in unfamiliar scientific environments and requirements was accomplished; facilities and equipment were used and operated and their suitability for intended purposes is assessed. The resupply phase worked well with cranes and booms operating efficiently during on- and off-loading. Research programs in a wide variety of disciplines encompassing sea, land, and air environments were assiduously pursued. Details of all of these activities are given.
- 40-1310**  
Antarctic III Expedition with RV *Polarstern* 1984/85. [Die Expedition ANTARKTIS III mit FS *Polarstern* 1984/85].  
Hempel, G., ed, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Oct. 1985, No.25, 209p. + append., In German with extended English summary and introduction.  
Ships, Expeditions, Logistics, Antarctica—Weddell Sea, Scotia Sea.  
The third Antarctic expedition of the RV *Polarstern* extended from Oct. 9, 1984-Apr. 2, 1985. This expedition entailed mainly biological research projects in the south polar sea, although other disciplines also participated. The first Antarctic leg traversed the Bransfield Strait and southern Scotia Sea for participation in the Second International BIOMASS Experiment (SIBEX), dealing with the distribution of krill in relation to local physical and biological environmental parameters. The cruise had to be terminated prematurely because of damage to the hydraulic system of the starboard adjustable propeller. The ANT III/3 leg commenced at Punta Arenas on Jan. 2, 1985 and ended in Cape Town on Mar. 5, 1985. Research during this leg focussed on three geographic areas: the Bransfield Strait-Weddell Sea Confluence; Vestkapp (eastern Weddell Sea); and the Filchner Depression/Gould Bay. Studies were made on the distribution of plankton as well as krill brood during the first part of the cruise. The Vestkapp area was the site of a complex assessment of the pelagic and benthic system in the eastern Weddell Sea. These investigations were conducted in conjunction with intensive oceanographic surveys as well as ecophysiological experiments. Georg-von-Neumayer Station was supplied during this leg. (Auth. mod.)
- 40-1311**  
Index of regional snow-pack stability based on natural slab avalanches.  
Judson, A., et al, *Journal of glaciology*, 1985, 31(108), p.67-73, 15 refs., In English with French and German summaries.  
King, R.M.  
Indexes (ratios), Snow cover stability, Avalanches, Snow slides, United States—Colorado—Front Range.
- 40-1312**  
Frazil formation in water of different salinities and supercoolings.  
Tsang, G., et al, *Journal of glaciology*, 1985, 31(108), p.74-85, 7 refs., In English with French and German summaries.  
Hanley, T.O.  
Frazil ice, Ice formation, Water temperature, Salinity.
- 40-1313**  
Flood and landslide events, Peyto Glacier terminus, Alberta, Canada, 11-14 July 1983.  
Johnson, P.G., et al, *Journal of glaciology*, 1985, 31(108), p.86-91, 13 refs., In English with French and German summaries.  
Power, J.M.  
Floods, Landslides, Ground ice, Moraines, Canada—Alberta—Peyto Glacier.
- 40-1314**  
Determination of the flow properties at Dye 3, south Greenland, by bore-hole-tilting measurements and perturbation modelling.  
Dahl-Jensen, D., *Journal of glaciology*, 1985, 31(108), p.92-98, 23 refs., In English with French and German summaries.  
Ice sheets, Glacier flow, Borehole instruments, Ice models, Ice deformation, Greenland—Dye 3.
- 40-1315**  
Dynamics of ice-sheet outlets.  
McIntyre, N.F., *Journal of glaciology*, 1985, 31(108), p.99-107, 44 refs., In English with French and German summaries.  
Ice sheets, Subglacial drainage, Ice mechanics, Ice creep, Basal sliding.  
A comparison of data from aircraft altimetry, Landsat imagery, and radio echo-sounding has shown characteristic surface topographies associated with sheet and stream flow. The transition between the two is abrupt and occurs at a step in the subglacial topography. This abrupt transition appears to be topographically controlled since basal temperatures are at the pressure-melting point well inland of the change in regime. The Marie Byrd Land ice streams exhibit qualitative differences from other ice-sheet outlets, however; the change to lower driving stresses is much more gradual and occurs several hundred kilometers inland. Such ice streams have particularly low surface slopes and appear in form and flow regime to resemble confined ice shelves rather than grounded ice. Acceleration of the ice is pinned to a subglacial step and propagation of high velocities inland of this feature seems improbable. Rapid ice flow through subglacial trenches may also ensure a relatively permanent trough through accentuation of the feature by erosion. This is concentrated towards the heads of outlet glaciers upstream of the region where significant basal decoupling occurs. (Auth. mod.)
- 40-1316**  
Spatial and temporal variations in electrical conductivity in a pro-glacial stream system.  
Gurnell, A.M., *Journal of glaciology*, 1985, 31(108), p.108-114, 17 refs., In English with French and German summaries.  
Meltwater, Glacial hydrology, Electrical resistivity, Diurnal variations.
- 40-1317**  
Adjusting two-dimensional velocity data to obey continuity.  
Rasmussen, L.A., *Journal of glaciology*, 1985, 31(108), p.115-119, In English with French and German summaries.  
Glacier flow, Glacier thickness, Glacier mass balance, Analysis (mathematical).
- 40-1318**  
Normal stress effects in the creep of ice.  
McTigue, D.F., et al, *Journal of glaciology*, 1985, 31(108), p.120-126, 28 refs., In English with French and German summaries.  
Passman, S.L., Jones, S.J.  
Glacier ice, Ice creep, Ice models, Shear stress, Crevasses.

40-1319

Growth forms of large frost crystals in the Antarctic. Knight, C.A., et al, *Journal of glaciology*, 1985, 31(108), p.127-135, 20 refs., In English with French and German summaries.

DeVries, A.L.

Ice crystal structure, Ice crystal growth, Frost, Ice caves, Ice tunnels, Temperature gradients, Antarctica—Ross Island.

A variety of frost-crystal forms found growing from the vapor in ice caves and tunnels in the Antarctic are described and illustrated. Complex layered structures found within large, skeletal crystals are ascribed to the action of the temperature gradient. Some c-axis growth forms and a rare type of bicrystal growth—accelerated growth in a particular direction along a grain boundary—are also shown. (Auth.)

40-1320

Audibility within and outside deposited snow.

Johnson, J.B., *Journal of glaciology*, 1985, 31(108), MP 1960, p.136-142, 12 refs., In English with French and German summaries.

Snow cover effect, Snow acoustics, Sound transmission, Noise (sound).

Factors which control the audibility within and outside deposited snow are described and applied to explain the preferential detection of sound by persons buried under avalanche debris as compared to persons on the overlying snow surface. Strong attenuation of acoustic waves in snow and the small acoustic impedance differences between snow and air are responsible for the strong absorption and transmission-loss characteristics that are observed for snow. The absorption and transmission-loss characteristics are independent of the direction of propagation of acoustic signals through the snow. The preferential detection of sound by a person buried under snow can be explained by the relatively higher level of background acoustic noise that exists for persons above the snow surface as compared to an avalanche burial victim. This noise masks sound transmitted to persons on the snow surface, causing a reduction of hearing sensitivity as compared to the burial victim. Additionally, the listening concentration of a buried individual is generally greater than for persons working on the snow surface, increasing their subjective awareness of sound. (Auth.)

40-1321

Bedrock control on glacial limits: examples from the Ladakh and Zaskar Ranges, northwestern Himalaya, India.

Burbank, D.W., et al, *Journal of glaciology*, 1985, 31(108), p.143-149, 33 refs., In English with French and German summaries.

Fort, M.B.

Mountain glaciers, Snow line, Geologic structures, India—Ladakh Range, India—Zaskar Range.

40-1322

Changes in texture and fabric of particles in glacial traction with distance from source, Mýrdalsjökull, Iceland.

Humlum, O., *Journal of glaciology*, 1985, 31(108), p.150-156, 25 refs., In English with French and German summaries.

Glacial deposits, Glacial erosion, Traction, Iceland—Mýrdalsjökull.

40-1323

Internal structure and ice crystallography of seasonal frost mounds.

Pollard, W.H., et al, *Journal of glaciology*, 1985, 31(108), p.157-162, 25 refs., In English with French and German summaries.

French, H.M.

Ground ice, Ice crystal structure, Ice crystal growth, Seasonal variations.

40-1324

Mixing formulae and experimental results for the dielectric constant of snow.

Sihvola, A., et al, *Journal of glaciology*, 1985, 31(108), p.163-170, 21 refs., In English with French and German summaries.

Nyfors, E., Tiuri, M.

Snow electrical properties, Dielectric properties, Snow water content.

40-1325

Measurement of the fracture toughness of glacier ice.

Andrews, R.M., *Journal of glaciology*, 1985, 31(108), p.171-176, 23 refs., In English with French and German summaries.

Glacier ice, Ice mechanics, Fracturing.

40-1326

Cylindrical flow in and over channels of irregular shape.

Shoemaker, E.M., *Journal of glaciology*, 1985, 31(108), p.177-184, 18 refs., In English with French and German summaries.

Ice creep, Glacier flow, Analysis (mathematics).

40-1327

Reconstruction of snow-avalanche characteristics in Montana, U.S.A., using vegetative indicators.

Butler, D.R., et al, *Journal of glaciology*, 1985, 31(108), p.185-187, 12 refs., In English with French and German summaries.

Malanson, G.P., Snow avalanche characteristics in Montana.

Avalanches, Snow water content, Vegetation, Damage.

40-1328

Diurnal hysteresis of snow albedo.

McGuffie, K., et al, *Journal of glaciology*, 1985, 31(108), p.188-189, 9 refs., In English with French and German summaries.

Henderson-Sellers, A.

Snow optics, Albedo, Diurnal variations, Antarctica—Mizuho Station, Canada—Northwest Territories—Resolute.

The appearance of a diurnal hysteresis in snow albedo is a widely reported phenomenon. This note discusses the relative importance of two separate effects: surface morphosis and surface irregularities (sastrugi). It is concluded that surface morphosis is the more important effect of the two in the region of the marginal cryosphere. Surface irregularities probably are the dominant influence only on permanent cryospheric areas such as the Greenland and Antarctic plateaux. (Auth.)

40-1329

Preferential discharge of pollutants during snowmelt in Scotland.

Morris, E.M., et al, *Journal of glaciology*, 1985, 31(108), p.190-193, 6 refs., In English with French and German summaries.

Thomas, A.G.

Meltwater, Water pollution, Streams, United Kingdom—Scotland.

40-1330

Note on the density distribution of dry snow.

Ling, C.-H., *Journal of glaciology*, 1985, 31(108), p.194-195, 5 refs., In English with French and German summaries.

Snow water content, Snow density, Analysis (mathematics).

40-1331

Examination of selected microparticles from the Sentik Glacier core, Ladakh, Himalaya, India.

Goss, E., et al, *Journal of glaciology*, 1985, 31(108), p.196-197, 3 refs., In English with French and German summaries.

Mayewski, P.A., Lyons, W.B.

Glacier ice, Ice cores, Microstructure, India—Sentik Glacier.

40-1332

Mass balance of the Greenland ice sheet at Dye 3. Reeh, N., et al, *Journal of glaciology*, 1985, 31(108), p.198-200, 14 refs., In English with French and German summaries.

Gundestrup, N.S.

Ice sheets, Mass balance, Ice cover thickness, Greenland—Dye 3.

40-1333

Offshore outlook—technological trends in the American Arctic.

Jahns, H.O., *Arctic news-record*, Summer 1985, 4(2), p.9-15.

Offshore drilling, Offshore structures, Sea ice, Ice loads, Earthquakes, Ships, Bering Sea, Beaufort Sea.

40-1334

Alaska Beaufort offshore challenges technology. *Arctic news-record*, Summer 1985, 4(2), p.16-19. Based on a report by Han-Padron Associates, New York: Beaufort Sea petroleum technology assessment.

Sea ice, Ice pressure, Offshore structures, Icebreakers.

40-1335

Operation, testing and design of vessels in the Canadian Beaufort Sea.

Churcher, A.C., et al, *Arctic news-record*, Summer 1985, 4(2), p.33-44, 3 refs.

Johansson, B.M., Duff, J.

Sea ice, Offshore drilling, Tests, Icebreakers, Damage, Ships.

40-1336

Electric dipole fields over a quarter space earth inhomogeneity and application to ice hazard detection. Ryan, J., et al, *Radio science*, Nov.-Dec. 1985, 20(6), p.1518-1528, 20 refs.

Walsh, J.

Electric fields, Ice detection, Sea ice, Electromagnetic prospecting, Analysis (mathematics).

40-1337

Cryoconite holes on glaciers.

Wharton, R.A., Jr., et al, *Bioscience*, Sep. 1985, 35(8), p.499-503, 20 refs.

McKay, C.P., Simmons, G.M., Jr., Parker, B.C.

Cryobiology, Glacier surfaces, Microbiology, Antarctica—Victoria Land.

Cryoconite holes are water-filled depressions on the surface of glaciers. They contain microbial communities and may contribute to glacial wastage and biological colonization of ice-free areas. This article discusses cryoconite holes on glaciers, the physical and biological factors involved in their formation, their functioning as ecosystems, and the organisms they contain. Also considered is the role these structures play in glacial wastage and biological colonization of ice-free areas. The examples come primarily from the glaciers of southern Victoria Land. (Auth. mod.)

40-1338

Water-column studies near a melting Arctic iceberg. Shulenberg, E., *Polar biology*, 1983, 2(3), p.149-158, 17 refs.

Icebergs, Meltwater, Ice melting.

The Arctic iceberg does not appear to grossly perturb water column plant biology nearby, but measures of rates of productivity might show otherwise, particularly near larger, antarctic icebergs. (Auth. mod.)

40-1339

Sea ice microbial communities (SIMCO). 1. Distribution, abundance and primary production of ice macroalgae in McMurdo Sound, Antarctica, in 1980.

Palmisano, A.C., et al, *Polar biology*, 1983, 2(3), p.171-177, Refs. p.176-177.

Sullivan, C.W.

Sea ice, Bacteria, Microbiology, Algae, Cryobiology, Antarctica—McMurdo Sound.

Sea ice microbial communities standing crops in the West Sound, previously considered a biologically depauperate region due to persistent ice cover and local current regimes, were greater than or equal to those of the East Sound when areas of similar ice thickness were compared. Biomass was located almost entirely in the bottom 20 cm of annual ice including over 99% of the chlorophyll *a* and ATP, and 93% of the particulate organic carbon. During the ice algal bloom, concentrations of chlorophyll *a* in the bottom 20 cm of ice were 2000 times greater than under ice phytoplankton at 1 m depths. Phaeopigment-chlorophyll *a* ratios (P:C) were significantly higher in the upper ice column than in the bottom 20 cm. An hypothesis is presented that the ice contains a frozen record of P:C ratios in the surface seawater during ice formation. Photosynthetic rate of ice microalgae were measured in the laboratory under simulated *in situ* conditions. It is concluded that the bottom type SIMCO contributes a considerable amount of new carbon to McMurdo Sound during the austral spring. (Auth. mod.)

40-1340

Infrared spectrum of vitrified liquid water. A comparison with the vapor deposited amorphous form. Mayer, E., *Journal of physical chemistry*, Aug. 1, 1985, 89(16), p.3474-3477, 25 refs.

Vitreous ice, Infrared spectroscopy, Ice crystal structure, Cooling, Aerosols, Water vapor, Hydrogen bonds.

40-1341

Beaufort Environmental Monitoring Project, 198-1984.

Crombie, D.E., Canada. Department of Indian and Northern Affairs. *Environmental studies*, 1985, No.34, 292p., Refs. passim.

Environmental impact, Marine biology, Offshore structures, Sea ice distribution, Hydrocarbons, Pollution, Oil spills, Icebreakers, Marine transportation Beaufort Sea.

40-1342

Aircraft accident report—World Airways, Inc., flight 30H, McDonnell Douglas DC-10-30CF, N113WA, Boston-Logan International Airport, Boston, Massachusetts, January 23, 1982 (Supersedes NTSB-AAR-82/15). U.S. National Transportation Safety Board. Report, July 10, 1985, NTSB/AAR-85/06, 134p. PB85-910406.

Aircraft landing areas, Runways, Road icing, Cold weather operation, Accidents, Trafficability, Skid resistance, Fog, Airplanes, Safety.

40-1343

1982-83 winter test report of the Committee on Winter Driving Hazards, National Safety Council. Stevens Point, Wisconsin, Highway Traffic Safety Division, [1984], 37p. + 21 figs., 6 refs.

Cold weather operation, Vehicles, Snow cover effect, Ice cover effect, Safety, Rubber ice friction, Rubber snow friction, Traction, Tests, Brakes (motion arresters).

- 40-1344**  
Arctic marine phototropic systems: functions of sea ice stabilization.  
Apollonio, S., *Arctic*, Sep. 1985, 38(3), p.167-173, 26 refs., With French summary.
- 40-1345**  
Algae, Ice bottom surface, Sea ice, Plankton, Marine biology, Ecosystems.
- 40-1346**  
Ice shelf studies off Northern Ellesmere Island, spring 1983.  
Jeffries, M.O., *Arctic*, Sep. 1985, 38(3), p.174-177, 19 refs., With French summary.
- 40-1347**  
Ice cores, Ice mechanics, Ice salinity, Snow samplers, Firn, Ice shelves, Ice conditions, Canada—Northwest Territories—Ellesmere Island.
- 40-1348**  
Tundra fire regimes in the Noatak River watershed, Alaska: 1956-83.  
Racine, C.H., et al, *Arctic*, Sep. 1985, 38(3), p.194-200, With French summary.
- 40-1349**  
Dennis, J.G., Patterson, W.A., III.  
Tundra, Fires, Remote sensing, Watersheds, LANDSAT, United States—Alaska—Brooks Range.
- 40-1350**  
Species composition and abundance of zooplankton in the nearshore Beaufort Sea in winter-spring.  
Horner, R., et al, *Arctic*, Sep. 1985, 38(3), p.201-209, 41 refs., With French summary.
- 40-1351**  
Murphy, D.  
Plankton, Sea ice, Ice bottom surface, Marine biology, Classifications, Distribution, Seasonal variations, Beaufort Sea.
- 40-1352**  
Pollen, oxygen isotope content and seasonality in an ice core from the Penny Ice Cap, Baffin Island.  
Short, S.K., et al, *Arctic*, Sep. 1985, 38(3), p.214-218, 18 refs., With French summary.
- 40-1353**  
Holdsworth, G.  
Ice cores, Pollen, Drill core analysis, Palynology, Paleoclimatology, Oxygen isotopes, Seasonal variations, Canada—Northwest Territories—Baffin Island.
- 40-1354**  
Pingo in the Mala River Valley, Baffin Island, Northwest Territories, Canada.  
Scott, G.W., *Arctic*, Sep. 1985, 38(3), p.244-245, 10 refs., With French summary.
- 40-1355**  
Pingos, Permafrost, Ground ice, Soil water, River basins, Landforms, Canada—Northwest Territories—Baffin Island.
- 40-1356**  
Proceedings.  
National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, 70p., Refs. passim. For individual papers see 40-1351 through 40-1359.
- 40-1357**  
Jones, R.H., ed.  
Soil freezing, Artificial freezing, Frost heave, Frozen ground strength, Frozen ground mechanics, Meetings, Thermal properties, Rheology, Tunneling (excavation), Models.
- 40-1358**  
Thermal aspects and analysis.  
Holden, J.T., National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, p.1-5, 19 refs.
- 40-1359**  
Soil freezing, Thermal properties, Freeze thaw cycles, Heat transfer, Ground thawing, Engineering, Thermal analysis, Frozen ground mechanics, Unfrozen water content, Frost penetration.
- 40-1360**  
Frost heave: models and observations.  
Piper, D., National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, p.7-14, 19 refs.
- 40-1361**  
Frost heave, Mathematical models, Ice lenses, Heat transfer, Mass transfer, Frost action.
- 40-1362**  
Modifications to equipment, and improvements in facilities used in the study of mass transport in a partially frozen soil by thermal neutron radiography.  
Clark, M.A., et al, National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, p.15-20, 1 ref.
- 40-1363**  
Kettle, R.J.  
Soil freezing, Frozen ground mechanics, Mass transfer, Radiometry, Psychrometers, Thermocouples, Neutrons.
- 40-1364**  
Mechanical properties of frozen ground.  
Jones, R.H., National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, p.21-26, 14 refs.
- 40-1365**  
Frozen ground mechanics, Frozen ground strength, Strains, Soil freezing, Soil creep, Acoustic measurement, Temperature effects, Time factor.
- 40-1366**  
Modelling the creep behaviour of frozen sands.  
Hampton, C.N., et al, National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, p.27-33, 6 refs.
- 40-1367**  
Jones, R.H., Gardner, A.P.  
Frozen ground mechanics, Soil creep, Sands, Frozen ground strength, Stresses, Rheology, Models, Deformation.
- 40-1368**  
Freeze wall structural design and case histories.  
Auld, F.A., National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, p.35-43, 1 ref.
- 40-1369**  
Frozen ground strength, Soil stabilization, Tunnels, Shafts (excavations), Walls, Artificial freezing, Soil freezing, Design, Bearing strength, Engineering, Rheology.
- 40-1370**  
Three Valleys tunnel—the reality of a rolling freeze.  
Hicatt, M.J., et al, National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, p.45-52, Draper, A.R.
- 40-1371**  
Tunneling (excavation), Clay soils, Soil freezing, Artificial freezing, Liquefied gases, Grouting, Safety.
- 40-1372**  
Optimum ice wall construction.  
Harris, J.S., National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, p.53-58, 6 refs.
- 40-1373**  
Soil freezing, Artificial freezing, Ground ice, Excavation, Design, Pipes (tubes), Liquefied gases, Cryogenic soils.
- 40-1374**  
Technical visit to the Kyoto subway (Karasuma line—Kamogawa section).  
English, H.C., National Symposium on Ground Freezing, 3rd, Sep. 26, 1985, Nottingham, University, 1985, p.59-70.
- 40-1375**  
Soil freezing, Artificial freezing, Excavation, Refrigeration, Tunneling (excavation), Railroad tunnels.
- 40-1376**  
Iceberg grounding and scouring frequency, Labrador Sea.  
Woodworth-Lynas, C.M.T., et al, *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering C-CORE publication*, 1984, 84-16, p.259-262, 4 refs.
- 40-1377**  
Simms, A., Rendell, C.M.  
Icebergs, Ice scoring, Grounded ice, Ocean bottom, Hydraulic structures, Pipelines, Labrador Sea.
- 40-1378**  
Climate, geomorphology, and glaciology of the Shackleton Glacier area, Queen Maud Mountains, Antarctica.  
LaPrade, K.E., *American Geophysical Union. Antarctic research series*, 1984, 36(9), p.163-196, Refs. p.191-196.
- 40-1379**  
Glacial geology, Geologic structures, Permafrost structure, Patterned ground, Frost heave, Weathering, Antarctica—Shackleton Glacier.
- 40-1380**  
The study area centers around Shackleton Glacier, which flows northward across the central part of the Queen Maud Mountains, central sector of the Transantarctic Mountains. The climate is polar and Shackleton Glacier and its tributaries drain essentially all of the study area and have influenced the landforms, especially in the southern part. Weathering is mainly mechanical, including frost wedging, granular disintegration, alternate heating and cooling with hydration, and honeycombing. Well-developed patterned ground has resulted from frost wedging. Ancient chemical weathering is indicated by in situ alteration and replacement of minerals. Present chemical weathering consists of minor amounts of iron staining and solution pits. Glacial erosion features include benches, broad summits, striations, cirques, cols, arêtes, horns, truncated spurs, hanging tributaries and valleys, and U shaped valleys. Depositional features include tillite, stranded lateral moraines, lateral, medial, and ground moraines, and rock glaciers. Glaciations of two age groups are noted: Queen Maud Glaciation of middle to late Tertiary age and "Final" Glaciation of Quaternary age. The Final Glaciation includes several minor glacial phases. The Queen Maud and Final glaciations are tentatively correlated with other glaciations in the Transantarctic Mountains. (Auth)
- 40-1381**  
Winter driving—a challenge in emissions control. *Environment update*, Apr. 1985, 5(4), p.10-11.
- 40-1382**  
Cold weather operation, Vehicles, Air pollution, Winter maintenance, Heating.
- 40-1383**  
Inventorying forest and other vegetation of the high latitude and high altitude regions; Proceedings of an international symposium, Fairbanks, AK, USA, 23-26 July 1984.  
LaBau, V.J., ed, Bethesda, MD, Society of American Foresters, 1984, 296p., Refs. passim. For selected papers see 40-1364 through 40-1369.
- 40-1384**  
Kerr, C.L., ed.  
Forestry, Vegetation, Remote sensing, Snow cover effect, Meetings, Permafrost, Altitude, Polar regions, Environments, Meteorological factors.
- 40-1385**  
Cold region vegetation information needs from the perspective of wild-life and fisheries.  
Lent, P.C., Inventorying forest and other vegetation of the high latitude and high altitude regions; Proceedings of an international symposium, Fairbanks, AK, July 23-26, 1984. Edited by V.J. LaBau and C.L. Kerr, Bethesda, MD, Society of American Foresters, 1984, p.20-27, 32 refs.
- 40-1386**  
Vegetation, Environmental impact, Remote sensing, Polar regions, Models, Animals.
- 40-1387**  
Constraints and approaches in high latitude natural resource sampling and research.  
Slaughter, C.W., et al, MP 2013, Inventorying forest and other vegetation of the high latitude and high altitude regions; Proceedings of an international symposium, Fairbanks, AK, July 23-26, 1984. Edited by V.J. LaBau and C.L. Kerr, Bethesda, MD, Society of American Foresters, 1984, p.41-46, 37 refs.
- 40-1388**  
Werner, R.A., Haugen, R.K.  
Natural resources, Snow cover effect, Permafrost, Meteorological factors, Remote sensing, Seasonal variations, Aerial surveys.
- 40-1389**  
Alaska-style vegetation inventory problems.  
Helm, D., Inventorying forest and other vegetation of the high latitude and high altitude regions; Proceedings of an international symposium, Fairbanks, AK, July 23-26, 1984. Edited by V.J. LaBau and C.L. Kerr, Bethesda, MD, Society of American Foresters, 1984, p.47-49, 3 refs.
- 40-1390**  
Vegetation, Meteorological factors, Forestry, Mosses, Lichens, United States—Alaska.
- 40-1391**  
Response of vegetation to landscape evolution on glacial till near Toolik Lake, Alaska.  
Jorgenson, T., Inventorying forest and other vegetation of the high latitude and high altitude regions; Proceedings of an international symposium, Fairbanks, AK, July 23-26, 1984. Edited by V.J. LaBau and C.L. Kerr, Bethesda, MD, Society of American Foresters, 1984, p.134-141, 13 refs.
- 40-1392**  
Vegetation, Landscape types, Glacial deposits, Paleoclimatology, Topographic factors, Classifications.
- 40-1393**  
Snow cover and interpretation of vegetation/habitat inventories.  
Brooks, J., III, et al, Inventorying forest and other vegetation of the high latitude and high altitude regions; Proceedings of an international symposium, Fairbanks, AK, July 23-26, 1984. Edited by V.J. LaBau and C.L. Kerr, Bethesda, MD, Society of American Foresters, 1984, p.203-210, 18 refs.
- 40-1394**  
Collins, W.B.  
Tundra, Snow cover distribution, Snow hardness, Vegetation, Snow depth, Snowdrifts, Metamorphism (snow), Wind factors, United States—Alaska—Kotzebue.
- 40-1395**  
Growth rate of western and mountain hemlock on four soil ecosystems in the Petersburg/Wrangell area of southeast Alaska.  
Van Heer, W.W.S., Inventorying forest and other vegetation of the high latitude and high altitude regions; Proceedings of an international symposium, Fairbanks, AK, July 23-26, 1984. Edited by V.J. LaBau and C.L. Kerr, Bethesda, MD, Society of American Foresters, 1984, p.225-229, 5 refs.
- 40-1396**  
Soils, Forest land, Growth, Ecosystems, Mountains, Altitude, Slope orientation, United States—Alaska.

- 40-1370**  
Documentation of iceberg groundings.  
El-Tahan, M., et al. *Environmental Studies Revolving Funds*. Report, June 1985, No.007, 162p., With French summary. 8 refs.  
El-Tahan, H., Courage, D., Mitten, P. Icebergs, Grounded ice, Sea ice distribution, Ice scoring, Offshore structures, Ice volume, Damage, Velocity, Statistical analysis, Hydraulic structures.
- 40-1371**  
Short-time creep of snow.  
Zaretskii, I.U.K., et al. *National Research Council, Canada*. Technical translation, 1985, NRC/CNR TT-2111, 183p., Refs. p.180-183. For Russian original see 36-3125.  
Chumichev, B.D.
- 40-1372**  
Ice creep, Ice mechanics, Ice crystal structure, Ice physics, Rheology, Ice deformation, Fracturing, Ice acoustics.
- 40-1372**  
Redesign of the M.V. Arctic bow—additional model tests at HSVA and WARC.  
Baker, D.N., Canada. Department of Transport. Report, May 1985, TP 5811E and TP 5812E, 2 vols. Icebreakers, Ice conditions, Models, Ice breaking, Tests.
- 40-1373**  
Dynamics of ocean waves in a continuous sea ice cover.  
Squire, V.A., Cambridge, England, University, Oct. 1978, 190p. + plates, Ph.D. thesis. Refs. p.180-190. Ocean waves, Ice cover effect, Wave propagation, Ice water interface, Sea ice, Hydrodynamics, Dynamic properties, Viscoelasticity, Mathematical models, Ice edge, Strains, Temperature effects, Forecasting.
- 40-1374**  
Effect of sea ice cover on ocean surface waves.  
Wadhams, P., Cambridge, England, University, Dec. 1973, 223p., Ph.D. thesis. Refs. p.209-223. Ocean waves, Ice cover effect, Wave propagation, Sea ice, Attenuation, Ice edge, Ice growth, Ice water interface, Spectra, Lasers, Analysis (mathematics), Ice conditions.
- 40-1375**  
Decade of change and future trends in roofing; Proceedings.  
International Symposium on Roofing Technology, 2nd, 1985, Chicago, National Roofing Contractors Association, 1985, 488p., Refs. passim. For selected papers see 40-1376 through 40-1380.
- 40-1376**  
Roofs, Thermal insulation, Freeze thaw cycles, Snow cover effect, Ice cover effect, Cracking (fracturing), Meetings, Decomposition, Damage.
- 40-1376**  
Temperature profiles of different roof waterproofing systems subjected to natural exposure conditions.  
May, J.O., Decade of change and future trends in roofing; proceedings of the 1985 International Symposium on Roofing Technology, Chicago, National Roofing Contractors Association, 1985, p.80-85.
- 40-1377**  
Theory to explain roof splitting by ice.  
Riedel, R.G., Decade of change and future trends in roofing; proceedings of the 1985 International Symposium on Roofing Technology, Chicago, National Roofing Contractors Association, 1985, p.112-115, 5 refs.
- 40-1378**  
Roofs, Cracking (fracturing), Ice cover effect, Damage, Ice action, Countermeasures, Theories, Temperature variations.
- 40-1378**  
Economic optimization of roof insulation thermal resistance.  
Adler, A., Decade of change and future trends in roofing; proceedings of the 1985 International Symposium on Roofing Technology, Chicago, National Roofing Contractors Association, 1985, p.138-143, 10 refs.
- 40-1379**  
Roofs, Thermal insulation, Cost analysis, Design, Snow cover effect.
- 40-1379**  
Performance of the protected membrane roof in Australia.  
Watts, H., Decade of change and future trends in roofing; proceedings of the 1985 International Symposium on Roofing Technology, Chicago, National Roofing Contractors Association, 1985, p.302-308, 13 refs.
- 40-1380**  
Investigation of the potential of ice lenses under built-up roofs on lightweight insulating concrete.  
Johnson, J.E., Decade of change and future trends in roofing; proceedings of the 1985 International Symposium on Roofing Technology, Chicago, National Roofing Contractors Association, 1985, p.475-180, 5 refs.
- 40-1380**  
Roofs, Ice lenses, Thermal insulation, Concrete structures, Temperature gradients.
- 40-1381**  
Information system on floating ice; feasibility study: summary report. (Système d'information sur les glaces flottantes; étude de faisabilité (REMSCAN): rapport sommaire).  
Green, D.W., et al. Canada. Department of Transport. Report, Jan. 1985, TP 5988F, 17p., In French with English summary.
- 40-1382**  
Ice detection, Floating ice, Remote sensing, Ice navigation, Telecommunication, Sea ice distribution, Ocean currents, Ice forecasting.
- 40-1382**  
French program of glaciological surveys. (Le programme de relevés glaciologiques français).  
Burnet, R., *Neige et avalanches*, June 1985, No.37, p.3-24, In French. 12 refs.
- 40-1383**  
Glacier surveys, Glaciology, Glacier ablation, Glacier flow, Glacial hydrology, France.
- 40-1383**  
Seismic method of measuring avalanche activity. (Mesure de l'activité avalancheuse par méthode sismique).  
Lafeuille, J., et al. *Neige et avalanches*, June 1985, No.37, p.25-39, In French. 3 refs.
- 40-1384**  
Avalanche formation, Seismic surveys, Avalanche mechanics, Snow mechanics, Detection.
- 40-1384**  
Avalanches in Chile. (Avalanches au Chili).  
Di Betta, J., *Neige et avalanches*, June 1985, No.37, p.57-71, In French.
- 40-1385**  
Avalanches, Avalanche surveys, Snow accumulation, Mountains, Climatic factors, Chile.
- 40-1385**  
Investigation of the multiaxial properties of snow at high rates of deformation.  
Brown, R.L., U.S. Army Research Office, Grant No. DAAG29-82-K-0127, Bozeman, Montana State University, July 1985, 7p., 11 refs.
- 40-1386**  
Snow physics, Snow crystal structure, Snow deformation, Strains, Stresses, Grain size, Snow density, Microstructure.
- 40-1386**  
Light cycles and latitude—plant survival can depend on it.  
Klebesadel, L.J., *University of Alaska, College Magazine*, June 1985, 3(3), p.26-28, Adapted from a report in *Agroborealis*, vol.17, No.1.
- 40-1387**  
Plants (botany), Cold tolerance, Light effects, Acclimatization, Climatic factors, Polar regions, Winter.
- 40-1387**  
Surface topography of the lower part of Columbia Glacier, Alaska, 1974-1981.  
Rasmussen, L.A., et al. *U.S. Geological Survey. Professional paper*, 1985, 1258-E, 63p., 19 refs.
- 40-1388**  
Glacier surfaces, Topographic features, Photogrammetric surveys, Topographic maps, Accuracy, Altitude, Analysis (mathematics), Calving, United States—Alaska—Columbia Glacier.
- 40-1388**  
Accident due to a small snow avalanche which occurred on 22 April, 1984 at Nishikawa-machi, Yamagata-ken.  
Nakamura, T., et al. Japan. *National Research Center for Disaster Prevention. Report*, Mar. 1985, No.34, p.73-87, In Japanese with English summary. 5 refs.
- 40-1389**  
Computer study of startup dynamics on wet snow avalanches.  
Nakamura, T., et al. Japan. *National Research Center for Disaster Prevention. Report*, Mar. 1985, No.34, p.89-109, With Japanese summary. 10 refs.
- 40-1390**  
Avalanche mechanics, Wet snow, Avalanche triggering, Avalanche tracks, Hydrodynamics, Computer applications, Slope orientation, Analysis (mathematics), Explosives.
- 40-1390**  
Snowpack accumulation before and after thinning a dog-hair stand of lodgepole pine.  
Gary, H.L., et al. *U.S. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. U.S. Forest Service research note*, Jan. 1985, RM-450, 4p., 13 refs.
- 40-1391**  
Snow accumulation, Forest canopy, Snow water equivalent, Watersheds, Snow hydrology, Water supply, United States—Wyoming.
- 40-1391**  
Temperature gradient weakening in snow.  
Sommerfeld, R.A., *U.S. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. U.S. Forest Service research note*, Jan. 1985, RM-449, 6p., 13 refs.
- 40-1392**  
Snow density, Metamorphism (snow), Depth hoar, Grain size, Temperature gradients.
- 40-1392**  
Safety guide for operations over ice (TB guide 5-3).  
Occupational health and safety, Chap. 5 (503), June 1, 1983, 29p., In English and French.
- 40-1393**  
Ice cover strength, Bearing strength, Ice crossings, Aircraft landing areas, Loads (forces), Safety, Ice cover thickness, Cold weather operation, Velocity, Winter maintenance, Ice cracks, Canada.
- 40-1393**  
Summary geologic report for the North Aleutian Shelf (OCS) planning area, Bering Sea, Alaska.  
Marlow, M.S., et al. *U.S. Geological Survey. Open file report*, 1984, No.84-773, 28p., Refs. p.24-28.
- 40-1394**  
Marine geology, Bottom sediment, Ice conditions, Natural resources, Sediment transport, Sedimentology, Petroleum industry, Seasonal variations, Earthquakes, Bering Sea.
- 40-1394**  
Snow crystals of hollow prism type observed at Mizuho Station, Antarctica.  
Wada, M., et al. *Antarctic record*, Sep. 1985, No.86, p.1-8, In English with Japanese summary. 18 refs.
- 40-1395**  
Snow crystal structure, Snow crystal nuclei, Antarctica—Mizuho Station.
- 40-1395**  
Observations of snow crystals were made, using a stereoscopic microscope at Mizuho Station during March 1979 and January 1980. Hollow prisms were observed rather in excess together with different shapes of snow crystals. Crystallographic properties and growth conditions of hollow prisms are discussed. (Auth.)
- 40-1395**  
Observations of the relative humidity in the katabatic wind area, Mizuho Station in East Antarctica.  
Wada, M., *Antarctic record*, Sep. 1985, No.86, p.9-16, In English with Japanese summary. 9 refs.
- 40-1396**  
Humidity, Ice cover effect, Wind velocity, Antarctica—Mizuho Station.
- 40-1396**  
Two types of humidity sensors were available at Mizuho Station in 1979 and 1980. One was Panametric's hygrometer which measures the electric capacity of Al<sub>2</sub>O<sub>3</sub> sensor, and the other a mirror-type hygrometer made by EG&G. Results of humidity observations using these hygrometers suggest that the air at Mizuho Station in winter is sometimes saturated with respect to ice. (Auth.)
- 40-1396**  
Salt origin in the Wright Valley, Antarctica.  
Tomiya, C., et al. *Antarctic record*, Sep. 1985, No.86, p.17-27, In English with Japanese summary. 17 refs.
- 40-1397**  
Lake water, Lacustrine deposits, Salinity, Chemical composition, Antarctica—Wright Valley.
- 40-1397**  
Salt distribution and stable isotope composition of sulfur have been investigated in the upper Wright Valley area. From the discussion on the mass balance of chemical constituents in the Don Juan basin, it is clear that calcium chloride-rich groundwater is an important source for the pond water, and other sources of sulfate and calcium ions other than groundwater and stream water should be considered. The age of Don Juan Pond was calculated to be younger than 9,000-37,000 years. The isotope composition of sulfur does not indicate the origin of sulfate ions at the Labyrinth area and the Don Juan basin. For the Vanda

basin, it is supposed that the sulfate minerals were formed from seawater on the slope of the valley when the valley was a fjord (Auth.)

40-1397

Vertical distribution of nutrients and DOC in lake waters near Syowa Station, Antarctica.

Fukui, F., et al, *Antarctic record*, Sep. 1985, No.86, p.28-35, In English with Japanese summary. 30 refs. Torii, T., Okabe, S.

Lake water, Water chemistry, Organic carbon, Antarctica—Showa Station.

The vertical distribution of inorganic nutrients and dissolved organic carbon was determined for two freshwater and three saline lakes near Showa Station in January to February, 1977. In the freshwater lakes of O-ike and Skallen Oike the concentrations of nutrients were very low and their distributions were vertically homogeneous. Saline lakes of Nurume and Suribati were typically meromictic and anoxic below 10 m depth. In the anoxic layers of these lakes, PO<sub>4</sub>-P and NH<sub>4</sub>-N were highly concentrated. These nutrients probably originated from the decomposition of organic materials in the bottom sediments. The concentrations of nutrients in Lake Hunazoko, which is the most saline lake around Syowa Station, were considerably lower than those of Lakes Nurume and Suribati except for SiO<sub>2</sub>-Si. The concentration of DOC in the water of the freshwater and saline lakes ranged from 0.84 to 2.84 mg/l and from 1.63 to 186 mg/l, respectively. In the saline lakes a significant correlation was found between chlorinity and DOC. (Auth.)

40-1398

Report on the seminar "Problems of Ice Navigation".

Yoshida, Y., *Antarctic record*, Sep. 1985, No.86, p.119-124, In Japanese with English summary.

Meetings, Ice navigation, Sea ice, Antarctica.

The first Seminar on the Problems of Ice Navigation was held at National Institute of Polar Research on October 12th, 1984. The objective was to review the present scientific knowledge of sea ice and technological problems relating to ice navigation, in particular in the Antarctic, and to seek the possibility of cooperative research on ice navigation in scientific and technological aspects. The following topics were discussed: distribution and characteristics of sea ice and survey methods; sea ice characteristics in the vicinity of Lützow-Holm Bay revealed from satellite image analysis; ice navigation of icebreakers *Fuji* and *Shirase*; sea ice problems in the shipbuilding technology; sea ice observation by remote-sensing techniques; sea ice thickness measurement by an impulse radar. (Auth.)

40-1399

Quantitative assessment of the accuracy of the techniques for calculating graupel growth.

Heymsfield, A.J., et al, *Journal of the atmospheric sciences*, Nov. 1985, 42(21), p.2264-2274, 16 refs.

Pflaum, J.C.

Snow pellets, Growth, Snow physics, Analysis (mathematics).

40-1400

Generalized form for impact velocities used to determine graupel accretional densities.

Rasmussen, R.M., et al, *Journal of the atmospheric sciences*, Nov. 1985, 42(21), p.2275-2279, 11 refs.

Heymsfield, A.J.

Snow pellets, Impact strength, Velocity.

40-1401

Glaciological investigations in Norway 1982. (Glasiologiske undersøkelser i Norge 1982).

Roland, E., et al, *Norway. Vassdrags- og elektrisitetsvesen. Hydrologisk avdeling. Rapport*, 1985, No.1-85. 102p. + map, In Norwegian with English summary. Refs. p.92-97.

Haakensen, N.

Glaciology, Glacier mass balance, Meteorology, Glacial hydrology, Drainage, Mathematical models, Forecasting, Subglacial observations, Sediment transport, Glacier flow, Norway.

40-1402

Summary of glaciological measurements made between 1960 and 1984 on the McMurdo Ice Shelf Antarctica.

McCrae, I.R., *Auckland, New Zealand. University. School of Engineering. Report*, Nov. 1984, No.360, 92p., Refs. p.86-92.

Glacier surveys, Ice shelves, Ice mechanics, Glacier flow, Ice cover thickness, Air temperature, Ice temperature, Flow rate, Snow accumulation, Radar echoes, Strains, Antarctica—McMurdo Ice Shelf.

For over 20 years the New Zealand Antarctic Division has undertaken an annual program of gathering glaciological data on the McMurdo Ice Shelf. Preliminary results have been useful for logistic purposes. Measurements have been made of shelf velocities, surface accumulation, strain rates, ice and temperatures profiles, shelf thicknesses, and brine infiltration.

This report summarizes all data collected to date on the McMurdo Ice Shelf. From these results, flow lines for the western half of the shelf are mapped, approximate surface snowfall and shelf thickness contour maps are drawn, and general glaciological features of the shelf discussed. An observation of particular interest was the presence, in the velocity data collected, of sinusoidal fluctuations with time. These variations have amplitudes up to 3 m/yr, with a period of 9-11 years, and are

confined to a region near the shelf front where the ice is relatively thin (20 to 40 m thick). Such variations appear linked to the extent of the annual breakout from the shelf front. Breakout has also fluctuated considerably in recent years. (Auth. mod.)

40-1403

Southern ocean: a survey of oceanographic and marine meteorological research work.

Hellmer, H.H., et al, *Bremerhaven, Germany. Alfred-Wegener-Institut für Polarforschung. Berichte zur Polarforschung*, Dec. 1985, No.26, 115p., Refs. p.102-115.

Bersch, M., Augstein, E., Grabemann, I.

Marine meteorology, Sea ice, Air water interactions, Oceanography, Antarctica—Weddell Sea.

This literature survey concentrates on studies of oceanic and atmospheric physics of the southern ocean and places special emphasis on the Weddell Sea. The latter region has been chosen as the main working area for the present and forthcoming German marine research in Antarctica. Research topics surveyed include: marine atmosphere; sea surface heat exchange; sea ice; Antarctic Intermediate Water; Weddell-Scotia Confluence; Antarctic Circumpolar Current; bottom topography; antarctic pressure trough, Weddell polynya; Weddell gyre; wind influence, mixing processes, and double diffusive convection among many others.

40-1404

Thermally forced circulation in a small, ice-covered lake.

Rahm, L., *Limnology and oceanography*, Sep. 1985, 30(5), p.1122-1128, 15 refs.

Lake ice, Thermal effects, Frozen lakes, Water flow.

40-1405

Access pipes for multiple sampling under ice.

Baird, F., et al, *Limnology and oceanography*, Sep. 1985, 30(5), p.1129-1130, 2 refs.

Buso, D.C., Hornbeck, J.W.

Ice cover, Lake water, Water chemistry, Sampling, Pipes (tubes).

40-1406

Statistical forecasting method for the ice edge in the Bering Sea.

Plotnikov, V.V., *Soviet meteorology and hydrology*, 1984, No.2, p.47-52, 11 refs., Translated from Meteorologiya i gidrologiya.

Sea ice distribution, Ice edge, Ice forecasting, Ice conditions, Statistical analysis, Meteorological factors, Charts.

40-1407

Long-period wind-speed fluctuations on the Arctic coast.

Vorontsov, A.A., et al, *Soviet meteorology and hydrology*, 1984, No.2, p.79-81, 10 refs., Translated from Meteorologiya i gidrologiya.

Zhevakina, L.V., Nikora, V.I.

Atmospheric circulation, Synoptic meteorology, Wind velocity, Soil air interface, Air water interactions, Turbulence, USSR—Murmansk, USSR—Chukotskiy Peninsula.

40-1408

Portable press for strength testing ice in the field.

Kozitskiĭ, I.E., *Soviet meteorology and hydrology*, 1984, No.2, p.92-93, 2 refs., Translated from Meteorologiya i gidrologiya.

Ice physics, Ice strength, Test equipment, Compressive properties.

40-1409

Ice-forming properties of natural aerosol particles.

Berezinskiĭ, N.A., et al, *Soviet meteorology and hydrology*, 1984, No.6, p.21-25, 11 refs., Translated from Meteorologiya i gidrologiya.

Stepanov, G.V.

Ice nuclei, Atmospheric composition, Aerosols, Samplers, Sampling, Ice formation.

40-1410

Aircraft icing in clear skies.

Kostianol, G.N., et al, *Soviet meteorology and hydrology*, 1984, No.6, p.92-94, 10 refs., Translated from Meteorologiya i gidrologiya.

Razorenova, T.V., Shagin, A.I.

Aircraft icing, Atmospheric composition, Humidity, Ice formation, Seasonal variations, Ice accretion.

40-1411

Forecast of peak water levels with ice jams on the Neva River.

Karnovich, V.N., et al, *Soviet meteorology and hydrology*, 1984, No.12, p.93-96, Translated from Meteorologiya i gidrologiya. 2 refs.

Surikova, Zh.N., Sevast'yanova, N.V.

River ice, Ice jams, Water level, Polynyas, Ice breakup, Ice floes, Slush, Flood forecasting, Icebound lakes.

40-1412

Estimate of the ice cover of Lake Ladoga by remote means.

Prokacheva, V.G., et al, *Soviet meteorology and hydrology*, 1984, No.7, p.69-73, Translated from Meteorologiya i gidrologiya. 8 refs.

Borodulin, V.V.

Aerial surveys, Spaceborne photography, Icebound lakes, Ice formation, Ice conditions, Ice breakup, Photointerpretation, Ice jams.

40-1413

Presumed climate variations and possible dynamics of permafrost.

Gavrilova, M.K., *Soviet meteorology and hydrology*, 1984, No.7, p.101-103, Translated from Meteorologiya i gidrologiya. 21 refs.

Climatic changes, Permafrost transformation, Human factors, Pollution, Weather modification, Climate control.

40-1414

Characteristics of background sulfate pollution of the snow cover on the territory of the USSR.

Belikova, T.V., et al, *Soviet meteorology and hydrology*, 1984, No.9, p.36-43, 9 refs., Translated from Meteorologiya i gidrologiya.

Pollution, Snow surveys, Route surveys, Snow composition, Air pollution, Water pollution, Charts.

40-1415

Formation of ice conditions in Arctic seas under the influence of major types of atmospheric circulation.

Semenov, E.V., et al, *Soviet meteorology and hydrology*, 1984, No.9, p.74-79, 15 refs., Translated from Meteorologiya i gidrologiya.

Taran, B.M.

Sea ice, Ice conditions, Drift, Wind factors, Mathematical models, Pack ice, Atmospheric circulation, Dynamic loads.

40-1416

Radar gage of freshwater ice thickness installed on a surface transport vehicle.

Klein, G.S., et al, *Soviet meteorology and hydrology*, 1984, No.9, p.103-107, 11 refs., Translated from Meteorologiya i gidrologiya.

Chizhov, A.N., Iul'fit, G.A.

Land ice, Ice cover thickness, Radar echoes, Remote sensing, Motor vehicles, All terrain vehicles.

40-1417

Physical processes in marginal zones of drifting sea ice.

Nikolaev, I.U.V., et al, *Soviet meteorology and hydrology*, 1984, No.11, p.61-65, Translated from Meteorologiya i gidrologiya. 26 refs.

Makhshtas, A.P., Ivanov, B.V.

Sea ice distribution, Ice edge, Heat transfer, Air water interactions, Ice air interface, Air temperature, Water temperature, Ice temperature.

40-1418

Formation mechanism of warm water layers in the pycnocline layer of Arctic seas.

Petrov, V.M., et al, *Soviet meteorology and hydrology*, 1984, No.11, p.96-99, Translated from Meteorologiya i gidrologiya. 7 refs.

Frolov, I.E.

Water transport, Radiation absorption, Water temperature, Salinity, Arctic regions, Seasonal variations, Sea water.

40-1419

Overhead power lines as affected by climate; proceedings of a seminar. (Recueil des communications).

Les lignes aériennes face à l'environnement climatique, Journée d'études, Gif-sur-Yvette, Apr. 1985, Paris, 1985, 102p., In French with English summaries. Refs. passim.

Power line icing, Snow accumulation, Climatic factors, Transmission lines, Ice loads, Snow loads, Damage, Meetings, Mapping, Countermeasures, Models.

40-1420

Statistical relationships between cold regions surface conditions and climatic parameters.

Bilello, M.A., MP 1961, Conference on Probability and Statistics in Atmospheric Sciences, 9th, Virginia Beach, VA, Oct. 9-11, 1985. Proceedings, 1985, p.508-517, Reprint from preprint volume.

Snow physics, Ice physics, Surface properties, Climatic factors, Ice cover thickness, Snow density, Degree days, Frost.

40-1421

**Delayed-elastic model for initiation and accumulation of creep cavitation at high temperatures.** Sinha, N.K., Advances in fracture research. Proceedings of the 6th International Conference on Fracture (ICF6), New Delhi, India, Dec. 4-10, 1984, New York, Pergamon, 1984, p.2295-2302, 17 refs.

**Ice creep. Rheology, Fracturing, Ice crystal structure, Grain size, Nucleation, Temperature effects, Ice elasticity, Damage, Stresses.**

40-1422

**Thermal emissivity of diathermanous materials.** Munis, R.H., et al, *Optical engineering*, Sep-Oct. 1985, 24(5), MP 1963, p.872-878, 10 refs.

**Radiometry, Optical properties, Infrared photography, Temperature measurement, Absorption, Materials, Emissivity.**

Thermal (2.0 to 5.6 micron) measurements of the normal emissivity of several diathermanous materials having slightly different refractive indices were made at 15.2°C, 4.9°C, and -5.6°C. Calculations of the total hemispherical emissivity were made from normal emissivity and plotted against the optical depth. A comparison of these data with a model proposed by R. Gordon (J. Am. Ceram. Soc. 39(8), 278 (1956)) indicates that at near-ambient temperatures they agree very closely. This comparison presumes that the narrow range of refractive indices about  $n=1.5$  associated with these specimens would not preclude them from being treated as having a value of 1.5.

40-1423

**Emissance: a little understood image deception in thermal imaging applications.** Munis, R.H., et al, *Society of Photo-Optical Instrumentation Engineers. Proceedings*, Apr. 1985, Vol. 549, MP 1962, p.72-78, 6 refs.

**Thermal radiation, Thermal properties, Materials, Radiometry, Temperature measurement, Emissivity.**

Image contrast enhancement sometimes complicates image understanding. A scene that consists of slightly dissimilar target and background emissances may not be readily identifiable without image enhancement. Even if the emissance differential can be sharply contrasted, those image surface patterns that convey subsurface thermal information may not be visible because of the wide dynamic range that must be accommodated by the thermal imaging system. This paper describes how emissance complicates the interpretation of thermal images. High and low emissance values affect the logic required for understanding thermal scenes. Thermal scenes containing emissance differentials are easier to interpret if there is a large contrast between the object and the background.

40-1424

**Modified Berg equation.** Connor, B. Alaska. *Dept. of Transportation and Public Facilities. Research notes*, June 1985, 4(12), 2p.

**Soil freezing, Frost penetration, Ground thawing, Thaw depth, Computer applications, Soil temperature, Air temperature, Degree days, Time factor, Thermal properties.**

40-1425

**Ice.** Jackson, D., *Science*, 1985, 19(12), p.13-17, 7-13.

**Icebergs, Ice islands, Ice scoring, Sea ice, Land ice, Ice physics.**

40-1426

**Smart submarining makes the oceans more opaque.** Daniel, D.C., *Submarine review*, Jan. 1985, p.12-23. Excerpted from Antisubmarine warfare in the nuclear age by D.C. Daniel, in Qrbis, Fall, 1984.

**Submarines, Underwater acoustics, Ice cover effect, Detection, Wave propagation.**

40-1427

**Strategies for winter maintenance of pavements and roadways.** Minsk, L.D., et al, *New York Academy of Sciences. Annals*, 1984, Vol.431, MP 1964, p.155-167, 14 refs.

**Eaton, R.A.**

**Winter maintenance, Road maintenance, Snow removal, Ice removal, Pavements, Freeze thaw cycles, Climatic factors, Snow depth, Cost analysis.**

40-1428

**Ice and snow mechanics—a challenge to theoretical and applied mechanics.**

Hutter, K., et al, Theoretical and applied mechanics. Edited by F.I. Niordson and N. Olhoff, Amsterdam, Elsevier Science Publishers B.V., North-Holland, 1985, p.163-217, Refs. p.211-217.

**Alts, T.**

**Snow mechanics, Ice mechanics, Thermodynamics, Analytical formation, Engineering, Fluid dynamics, Ice temperature, Subsea permafrost, Ground ice, Glacier ice, Ice sheets, Analysis (mathematics).**

40-1429

**Columbia Glacier in 1984: disintegration underway.** Meier, M.F., et al, *U.S. Geological Survey. Open-file report*, 1985, No.85-81, 15p., 12 refs.

**Rasmussen, L.A., Miller, D.S.**

**Glacier surveys, Glacier mass balance, Glacier flow, Glacier oscillation, Calving, Aerial surveys, Glacier beds, Subglacial observations, United States—Alaska—Columbia Glacier.**

40-1430

**Nearshore marine geologic investigations, Icy Cape to Wainwright, northeast Chukchi Sea.** Phillips, R.L., et al, *U.S. Geological Survey. Open-file report*, 1984, 84-828, 27p., 6 refs.

**Reiss, T.E.**

**Ice scoring, Marine geology, Ocean bottom, Bottom sediment, Bottom topography, Sedimentology, Ocean currents, Quaternary deposits, Sands, Chukchi Sea.**

40-1431

**Hydrology and geochemical processes of a sub-Arctic landfill, Fairbanks, Alaska: basic data.** Flynn, D.M., *U.S. Geological Survey. Open-file report*, 1985, No.85-195, 41p., 3 refs.

**Hydrology, Ground water, Geochemistry, Water table, Water chemistry, Wells, Water level, Water temperature, United States—Alaska—Fairbanks.**

40-1432

**Plastics applications in the Piston Bully: reducing costs through cost analysis.** Schmiedel, R., *Plastics in cars*, Düsseldorf, Verein Deutscher Ingenieure, 1983, p.109-119.

**DLC TL154 K8413**

**Materials, Snow removal, Low temperature research, Low temperature tests.**

The Piston Bully is a sophisticated snow plough used for the general maintenance of ski slopes, usually carried out at dusk or in the dark, at sub-zero temperatures and when it is snowing. It may also be used in other fields, e.g. as an operational and transport vehicle on marshy ground as well as in the arctic and antarctic regions. The vehicle is described and illustrated, its performance characteristics and those of its parts are specified, and a cost analysis is given.

40-1433

**Acid deposition: a study on the impact of snowmelt on the surface water quality of northeastern Minnesota.** Heiskary, S.A., et al, *Minnesota Pollution Control Agency*, 1983, 48p., Refs. p.36-38.

**Payer, R.D.**

**Snowmelt, Snow composition, Water chemistry, Meltwater, Water pollution, Streams, Hydrology, Watersheds, United States—Minnesota.**

40-1434

**Corrosion effect of chloride solutions on cement bricks and concrete.** [Vorgänge beim Angriff von Chloridlösungen auf Zementstein und Beton].

Madltsch, M., *Material und Technik*, Sep. 1984, 12(3), p.83-90, In German with French summary. 16 refs.

**Concrete durability, Cements, Salting, Bricks, Chemical ice prevention, Solutions, Damage, Concrete strength.**

40-1435

**Effect of pitching devices in icebreakers.** [Die Wirkung von Stampfanlagen bei Eisbrechern]. Waas, J., *Schiff und Hafen*, Dec. 1958, 10(12), p.1048-1050, In German.

**Ice elasticity, Icebreakers, Ice navigation, Measuring instruments.**

40-1436

**From the study on the process of ice ridging in Puck Bay.** [Z badań nad procesem pietrzenia lodu w zatoce Puckiej]. Zakrzewska, M., *Przegląd geofizyczny*, 1980, 25(2), p.129-136, In Polish with English summary. 15 refs.

**Pressure ridges, Ice cover strength, Ice water interface, Ice friction, Sea ice, Water level, Mathematical models, Wind factors, Ocean waves, Ocean currents, Shores.**

40-1437

**Forecasting of ice conditions on Lake Dabie.** [Zwiazki progностyczne zlodzenia Jeziora Dabie]. Gijratowicz, J.P., *Przegląd geofizyczny*, 1980, 25(2), p.103-109, In Polish with English summary. 7 refs.

**Ice forecasting, Lake ice, Ice conditions, Ice formation, Ice cover thickness, Poland—Dabie Lake.**

40-1438

**Photosynthesis-irradiance relationships in sea ice microalgae from McMurdo Sound, Antarctica.** Palmisano, A.C., et al, *Journal of phycology*, Sep. 1985, 21(3), p.341-346, Refs. p.345-346.

**SooHoo, J.B.**

**Photosynthesis, Ice cover effect, Snow cover effect, Algae, Cryobiology.**

Sea ice microalgae in McMurdo Sound were examined for photosynthesis-irradiance relationships and for the extent and time course of their photoadaptation to a reduction in *in situ* irradiance. Algae were collected from the bottom centimeter of coarse-grained congelation ice in an area free of natural snow cover. Photosynthetic rate was determined in short term (1 h) incubations. Photosynthetic parameters of the ice algal community were examined over a nine day period following the addition of 4 cm of surface snow while a control area remained snow-free. Low assimilation numbers and constant standing crop size suggested that the algal bloom may have already reached stationary growth phase, possibly minimizing their photoadaptive response. (Auth. mod.)

40-1439

**Sea ice microbial communities. 5. The vertical zonation of diatoms in an antarctic fast ice community.** McGrath Grossi, S., et al, *Journal of phycology*, Sep. 1985, 21(3), p.401-409, Refs. p.408-409.

**Sullivan, C.W.**

**Snow cover effect, Ice water interface, Algae, Fast ice, Ice cover effect, Antarctica—McMurdo Sound.**

A distinct vertical zonation was observed among diatoms in a bottom congelation ice community at McMurdo sound, during the 1981 spring bloom. The bottom 20 cm of ice collected in Dec. from four stations with variable snow cover was subdivided into 5 cm sections for analysis of algal distribution. Algal abundance was inversely related to the depth of snow cover, and generally decreased with increasing distance above the ice-water interface. Most diatoms showed peak abundance in the bottom 10 cm of the ice, where the proportion of living to empty cells was also highest. Two species, however, reached highest concentrations at depths 10-20 cm above the ice-water interface. Two factors are considered as contributing to the observed vertical zonation: successive blooms at the ice-water interface become spatially stratified within the ice by further accretion below, a differential growth of species occurs along physicochemical gradients within the ice column. A comparison of early versus late season profiles suggests the latter mechanism may prevail once ice accretion has ceased. (Auth.)

40-1440

**Fossil frost mound of Late Dryas age in middle Jutland (Denmark).** Kolstrup, E., *Boreas*, 1985, 14(3), p.217-223, 28 refs.

**Pingos, Frost mounds, Geomorphology, Fossils, Paleoclimatology.**

40-1441

**Liquefaction resistance of two alluvial volcanic soils sampled by *in situ* freezing.**

Hatanaka, M., et al, *Soils and foundations*, Sep. 1985, 25(3), p.49-63, 14 refs.

**Sugimoto, M., Suzuki, Y.**

**Soil profiles, Artificial freezing, Sampling, Shear strength, Saturation, Core samplers, Tests.**

40-1442

**Arctic Alaska—ever more variety amid the pack ice.** Cottrill, A., *Offshore engineer*, Oct. 1985, p.58-59.

**Ice islands, Artificial islands, Pack ice, Offshore drilling, Gravel, Seasonal variations.**

40-1443

**Polar low prediction facilitates planning.** *Offshore*, Sep. 1985, 45(9), p.134-136.

**Ship icing, Snowfall, Meteorological factors, Air temperature, Water temperature, Sea spray, Wind factors.**

40-1444

**Structure, salinity and density of multi-year sea ice pressure ridges.**

Richter-Menge, J.A., et al, *Journal of energy resources technology*, Dec. 1985, 107(4), p.493-497. For another source and abstract see 39-2413 (MP 1857). 11 refs.

**Cox, G.F.N.**

**Pressure ridges, Ice structure, Ice salinity, Ice density, Ice physics, Ice loads, Sea ice, Beaufort Sea.**

40-1445

**Flexural strength and fracture toughness of urea model ice.**

Timco, G.W., *Journal of energy resources technology*, Dec. 1985, 107(4), p.498-505, For another source see 39-2414. 40 refs.

**Ice strength, Ice models, Flexural strength, Ice structure, Ice cracks, Ice solid interface, Urea, Tensile properties, Ice loads, Fracturing.**

40-1446

In-ice calibration tests for an elongate, uniaxial brass ice stress sensor.

Johnson, J.B., *Journal of energy resources technology*, Dec. 1985, 107(4), MP 1966, p.506-510, For another source and abstract see 39-2420 (MP 1859). 8 refs. Ice cover strength, Ice solid interface, Ice loads, Stresses, Measuring instruments, Tests.

40-1447

Uniaxial constitutive equation of ice from beam tests. Xirouchakis, P.C., et al, *Journal of energy resources technology*, Dec. 1985, 107(4), p.511-515, For another source see 39-2419. 8 refs.

Wierzbicki, T.

Ice physics, Stresses, Strains, Analysis (mathematics), Tests.

40-1448

Development of the permafrost zone of Eurasia in Upper Cenozoic. (Razvitie kriolitozony Evrazii v verkhnem kaizozoe).

Popov, A.I., ed, Moscow, Nauka, 1985, 160p., In Russian. For individual papers see 40-1449 through 40-1465. Refs. passim.

Glacier ice, Permafrost origin, Drill core analysis, Permafrost structure, Alpine tundra, Isotope analysis, Permafrost distribution, Permafrost transformation, Subsea permafrost, Cryogenic soils, Frozen fines, Mountain glaciers.

40-1449

Paleocryogenic mantle of the northern Valkay periglacial zone. (Pokroynyi paleokriogennyi kompleks na severe Valkayskoi periglatsial'noi zony).

Rozenbaum, G.E., *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.4-15, In Russian. 21 refs.

Paleoclimatology, Permafrost origin, Permafrost distribution, Loess, Permafrost structure, Bibliographies.

40-1450

Permafrost conditions in northern Europe as an indication of Late Holocene and Recent climatic changes. (Merzlotnye uslovia evropeiskogo Severa kak pokazatel' klimaticeskikh izmenenii v pozdnem golotsene i v sovremennui epokhu).

Tumel', N.V., et al, *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.15-23, In Russian. 8 refs.

Mudrov, I.U.V.

Tundra, Permafrost structure, Paleocology, Topographic effects, Frozen rock temperature, Heat transfer, Climatic changes, Arctic landscapes, Analysis (mathematics).

40-1451

Relict permafrost in the northeastern European part of the USSR. (Reliktovia merzlaia zona Severo-Vostoka evropeiskoi chasti SSSR).

Oberman, N.G., *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.23-29, In Russian. 16 refs.

Permafrost transformation, Frozen rock temperature, Permafrost distribution, Permafrost thickness, Permafrost hydrology.

40-1452

Permafrost development in northern West Siberia. (K istorii razvitiia mnogoletnemerzlykh porod na severe Zapadnoi Sibiri).

Velikotskil', M.A., et al, *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.29-42, In Russian. 18 refs.

Mudrov, I.U.V.

Subsea permafrost, Quaternary deposits, Active layer, Permafrost formation, Hydrothermal processes.

40-1453

History of permafrost development in Upper Pleistocene-Holocene in the northern Yenisey area. (K istorii razvitiia mnogoletnemerzlykh porod v verkhnem pleistotsene-golotsene na eniseiskom Severe).

Tumel', N.V., *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.43-51, In Russian. 20 refs.

Permafrost distribution, Permafrost structure, Ice veins, Subsea permafrost, Active layer, Ground ice, Ice structure, Ice physical properties.

40-1454

Upper pleistocene stage of permafrost formation in eastern marginal areas of northern West Siberia. (Verkhnepleistotsenovyi etap kriolitogeneza na vostochnoi okraine severa Zapadnoi Sibiri).

Kuznetsova, T.P., et al, *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.52-67, In Russian. 19 refs.

Rogov, V.V., Shpolianskaia, N.A.

Soil profiles, Cryogenic soils, Frozen fines, Permafrost structure, Clays, Ground ice.

40-1455

Formation of thick frozen strata in western Siberia during the Karginskaya and Sartanskaya epochs of the Late Pleistocene. (Osobennosti formirovaniia mnogoletnemerzlykh tolshch Severa Zapadnoi Sibiri v karginskuiu i sartanskuiu epokhi pozdnego pleistotsena).

Vasil'chuk, I.U.K., et al, *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.67-81, In Russian. 30 refs.

Trofimov, V.T.

Soil profiles, Cryogenic soils, Permafrost origin, Ground ice, Ecology, Permafrost structure, Permafrost distribution, Soil structure, Climatic factors, Sporadic permafrost.

40-1456

Permafrost zone in northern West Siberia in Late Pleistocene and Holocene. (Kriolitizona Severa Zapadnoi Sibiri v pozdnem pleistotsene i golotsene).

Danilov, I.D., et al, *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.82-90, In Russian. 6 refs.

Nedeshva, G.N., Poliakov, E.I.

Permafrost origin, Radioactive age determination, Permafrost structure, Cryogenic textures, Permafrost distribution, Climatic changes, Land ice.

40-1457

Plicative dislocations of the permafrost zone in the Pleistocene deposits of northern Eurasia. (O plikativnykh dislokatsiakh i kriolitogeneze v pleistotsenovykh otlozheniakh Severnoi Evrazii).

Popov, A.I., *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.90-101, In Russian. 22 refs.

Land ice, Dislocations (materials), Frozen fines, Permafrost distribution, Marine deposits, Clays, Ground ice, Marls.

40-1458

Manifestations of cryogenesis in the composition of Cenozoic deposits in northeastern USSR (space-time aspects). (Proiavlenie kriogeneza v sostave kaizozolskikh otlozhenii Severo-Vostoka SSSR (prostranstvenno-vremennoi aspekt)).

Konishchev, V.N., et al, *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.101-107, In Russian. 24 refs.

Kolesnikov, S.F.

Permafrost distribution, Cryogenic soils, Soil formation, Soil profiles, Frost penetration, Minerals, Gravel.

40-1459

Dating permafrost formation in the northern Chukotskiy Peninsula. (Vremia formirovaniia mnogoletnei merzloty na Severnoi Chukotke).

Arkhangelov, A.A., et al, *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.108-112, In Russian. 16 refs.

Plakht, I.R., Kolesnikov, S.F., Parmuzina, O.I.U.

Permafrost origin, Permafrost dating, Stratigraphy, Palynology, Paleoclimatology.

40-1460

Conditions of thermokarst formation and the formative stages of alassy topography during Late Pleistocene and Holocene of the Northeast. (Uslovia razvitiia termokarsta i etapy formirovaniia alasnogo rel'efa ravnin Severo-Vostoka v pozdnem pleistotsene i golotsene).

Plakht, I.R., *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.112-120, In Russian. 39 refs.

Permafrost hydrology, Thermokarst, Alassy, Structural changes.

40-1461

Alpine cryolithozone of Eurasia in Late Pleistocene. (Al'piskaia kriolitizona Evrazii v pozdnem pleistotsene).

Gorbunov, A.P., *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.120-129, In Russian. 28 refs.

Alpine landscapes, Permafrost distribution, Permafrost transformation, Mountain glaciers, Plains, Structural changes, Frozen fines.

40-1462

Reconstruction of paleotemperatures of permafrost. (O rekonstruktsii paleotemperatur mnogoletnemerzlykh porod).

Balobaev, V.T., *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.129-136, In Russian. 3 refs.

Active layer, Permafrost physics, Permafrost transformation, Permafrost thermal properties, Frozen ground temperature, Heat transfer, Climatic changes, Analysis (mathematics).

40-1463

Using frost-shattering parameters in reconstructions of paleotemperatures. (Ob ispol'zovanii parametrov morozobolnogo rastreskivaniia pri paleotemperaturnykh rekonstruktsiakh).

Gevorkian, S.G., et al, *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.137-141, In Russian. 7 refs.

Podbornyi, E.E.

Frost shattering, Permafrost structure, Ice pressure, Ice veins, Ground ice, Surface temperature, Frost action, Heat transfer, Analysis (mathematics).

40-1464

Scientific and methodological peculiarities in radiocarbon dating of Late Pleistocene deposits of the Central Yakutia. (Nauchno-metodicheskie osobennosti radiouglerodnogo datirovaniia pozdnepleistotsenovykh mnogoletnemerzlykh otlozhenii Tsentral'noi Iakutii).

Kostiukovich, V.V., *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.141-150, In Russian. 12 refs.

Permafrost hydrology, Radioactive age determination, Thermokarst, Permafrost physics, Active layer, Geocryology, Geochronology, Hydrothermal processes, Charts, Geochemistry, Stratigraphy.

40-1465

Paleoclimatic peculiarities of the development of glacier cover over Arctic islands according to isotope-geochemical analyses of ice cores. (Paleoklimatichekie osobennosti razvitiia lednikovogo pokrova arkticheskikh ostrovov (po dannym izotopno-geokhimicheskogo analiza lednikovogo kerna)).

Korzun, A.V., *Razvitie kriolitozony Evrazii v verkhnem kaizozoe* (Development of the permafrost zone in Eurasia in Upper Cenozoic) edited by G.E. Rozenbaum, Moscow, Nauka, 1985, p.150-155, In Russian. 6 refs.

Mountain glaciers, Glacier ice, Drill core analysis, Geochemistry, Isotope analysis, Paleoclimatology.

40-1466

Radiophysical techniques employed for sea ice investigations.

Kurskaia, A.A., et al, *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.329-332, 6 refs.

Kutuz, B.G.

Ice physics, Backscattering, Side looking radar, Radiometry, Sea ice, Spectra, Wave propagation, Radio waves, Remote sensing, Microwaves, Emissivity.

40-1467

Polarization effects in sea ice signatures. Mätzler, C., et al, *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.333-338, 14 refs.

Ramsier, R.O., Svendsen, E.  
Sea ice, Microwaves, Polarization (waves), Remote sensing, Radiometry, Snow cover effect, Ice salinity, Ice density, Brightness, Ice temperature, Emissivity.

40-1468

Microwave signatures of the sea ice in the East Greenland current.

Skou, N., et al, *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.339-343, 5 refs.

Pedersen, L.T.

Ice conditions, Sea ice distribution, Microwaves, Polarization (waves), Radiometry, Brightness, Snow cover effect.

40-1469

Interpretation of aircraft sea ice microwave data.

Bogorodskii, V.V., et al, *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.344-346, 2 refs.

Darovskikh, A.N.

Sea ice distribution, Microwaves, Remote sensing, Ice edge, Ice temperature, Brightness, Ice conditions, Thermal radiation.

40-1470

Analysis of backscattering properties from SAR data of mountain regions.

Rott, H., *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.347-355, 30 refs.

Glacier surveys, Backscattering, Glacier ice, Wet snow, Mountains glaciers, Surface roughness, Iceland, Austria-Alps.

40-1471

On the ability of microwave radiometers to resolve spatially underlying surfaces and on methods to improve it.

Bogorodskii, V.V., et al, *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.356-359, 4 refs.

Kozlov, A.I.

Microwaves, Radiometry, Detection, Subsurface investigations, Polarization (waves), Analysis (mathematics).

40-1472

Microwave dielectric properties of surface snow.

Mätzler, C., et al, *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.366-371, 22 refs.

Aebischer, H., Schanda, E.

Snow electrical properties, Microwaves, Radiometry, Scattering, Dielectric properties, Brightness, Snow temperature, Wet snow, Spectra.

40-1473

Retrieval of snow water equivalent from Nimbus-7 SMMR data: effect of land-cover categories and weather conditions.

Hallikainen, M.T., *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.372-376, 9 refs.

Snow water equivalent, Remote sensing, Microwaves, Brightness, Surface properties, Meteorological factors, Mapping.

40-1474

Complex dielectric constant of snow at microwave frequencies.

Tiuri, M.E., et al, *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.377-382, 16 refs.

Sihvola, A.H., Nyfors, E.G., Hallikainen, M.T.

Snow electrical properties, Microwaves, Dielectric properties, Metamorphism (snow), Snow density, Unfrozen water content, Wet snow, Analysis (mathematics).

40-1475

Effect of snow cover on microwave backscatter from sea ice.

Kim, Y.-S., et al, *IEEE journal of oceanic engineering*, Dec. 1984, OE-9(5), p.383-388, 17 refs.

Onstott, R.G., Moore, R.K.

Sea ice, Microwaves, Backscattering, Ice surface, Snow cover effect, Surface roughness, Temperature effects.

40-1476

Prevention of freezing and other cold weather problems at wastewater treatment facilities.

Reed, S.C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1985, SR 85-11, 49p., ADA-160 727, 23 refs.

Pottle, D.S., Moeller, W.B., Ott, R., Peirent, R., Niedringhaus, E.L.

Underground facilities, Freezing, Cold weather performance, Waste treatment, Water treatment, Frost protection, Countermeasures, Design.

Freezing and other cold weather problems are a major cause of poor performance at wastewater treatment plants in cold climates.

mates. This report, based on experience in Alaska, in the north central U.S. and on a survey of over 200 treatment systems in northern New England, presents procedures and criteria so that designers can avoid cold weather problems in future systems. It also contains detailed guidance for assisting operators in overcoming current problems and deficiencies. The information is organized and presented in terms of the major process units that are likely to be found in a typical wastewater treatment system. A number of detailed case studies of problems and solutions at specific systems in northern New England are also included.

40-1477

Construction of snow airstrips for wheeled aircraft in the Antarctic.

Aver'ianov, V.G., et al, *Polar geography and geology*, Jan.-Mar. 1985, 9(1), p.37-44, 10 refs. For Russian original see 14G-29657 or 38-2708.

Klokov, V.D., Kliuchnikov, G.I.A., Korotkevich, E.S., Petrov, V.N.

Snow compression, Runways.

Until 1981 the personnel of the Soviet antarctic expeditions traveled between the USSR and Antarctica by sea. In that year movements of personnel by air began. The critical factor was that in 1980 the first Soviet snow airstrip for heavy wheeled aircraft was built at Molodezhnaya. The development of the techniques required for constructing such an airstrip on snow and firn is reviewed. (Auth.)

40-1478

Cryogenic landforms on King George Island, South Shetland Islands.

Väurim, B.I., et al, *Polar geography and geology*, Jan.-Mar. 1985, 9(1), p.62-69, 11 refs. For Russian original see 14E-31311 or 39-2039.

Moskalevskii, M.I.U.

Geocryology, Cryogenic structures, Nival relief, Frost heave, Antarctica—King George Island.

The South Shetland Is. lies within the oceanic geocryological zone of the Antarctic. King George I., one of the largest islands of the archipelago, presents a variety of landforms of cryogenic-denudational, nival, solifluction and cryostructural types. A distinct pattern can be discerned in the distribution of these landforms, controlled by geomorphology, climate and geocryological features. The cryogenic landforms most typical of the island are described; they include cryogenic-denudational and solifluction terraces, nivation cirques, sorted polygons and circles and linear microforms produced by frost-heaving on slopes. (Auth.)

40-1479

On-site hydrogen generation for meteorological stations.

Millard, S., *Weather*, Aug. 1985, 40(8), p.251-252.

Hydrogen, Meteorology, Gas generators, Antarctica—Halley Bay.

The generating unit consists of two standard 8 x 10 ft. containers commonly used on off-shore oil rigs, modified internally. A JME G2 hydrogen generator and associated electrical controls were fitted in one container and the low-pressure store in the other. The two containers are mounted as a finished caboose onto skids so that the unit can be towed from point to point to avoid snow buildup. The British Antarctic Survey is using the unit at Halley Bay.

40-1480

Ice conditions in the 1983/84 winter in the German coastal area between Ems and Trave Rivers. (Der Eiswinter 1983/84 im deutschen Küstengebiet zwischen Ems und Trave).

Koslowski, G., *Deutsche hydrographische Zeitschrift*, 1984, 37(4), p.165-169, In German. 5 refs.

Land ice, Ice conditions, Ice cover thickness, Shores, Meteorological factors, Winter, Germany.

40-1481

Experimental measurement of channeling of flow in porous media.

Oliphant, J.L., et al, *Soil science*, May 1985, 139(5), MP 1967, p.394-399, 10 refs.

Tice, A.R.

Soil water, Water flow, Porous materials, Channels (waterways), Hydraulics, Viscous flow, Laminar flow, Diffusion.

By comparing experimental measurements of the hydraulic conductivity and the effective self-diffusivity of water in porous media, a channeling parameter,  $c$ , is defined. This parameter measures the degree of division of flow paths in the media, but does not depend on the tortuosity of the paths or surface effects on the viscosity of the water. Values of  $c$  are obtained for Na-saturated montmorillonites containing from 0.82 to 7.7 g of water per g of clay and for Fairbanks silt containing from 0.135 to 0.23 g of water per g of silt. Values for the montmorillonites remain relatively close to the theoretically predicted value of 1/3 at all water contents, indicating maximally divided flow paths. Values for the silt vary from 100 to over 2000, indicating highly channelled flow.

40-1482

Geotechnical properties of frozen porous ground. (Geotechnische Eigenschaften von gefrorenen Lockergesteinen).

Herzog, P., et al, *Zürich. Eidgenössische Technische Hochschule. Institut für Grundbau und Bodenmechanik. Mitteilungen*, 1985, No.125, p.42-44, In German. 5 refs.

Hofer, A.

Frozen ground strength, Artificial freezing, Excavation, Soil creep, Frozen ground mechanics, Rheology, Deformation, Countermeasures.

40-1483

Bases and foundations of oil and gas industry objects. (Osnovaniia i fundamentey ob'ektov nefiianoi i gazovoi promyshlennosti).

Tishin, V.G., Moscow, Nedra, 1985, 174p., In Russian with English table of contents enclosed. 29 refs.

Foundations, Earth fills, Active layer, Piles, Rock fills, Permafrost bases, Swamps, Petroleum industry, Seasonal freeze thaw, Subpolar regions.

40-1484

Perennially frozen rocks in the oil- and gas-bearing regions of the USSR. (Mnogoletnermeryye porody neftegazonosnykh raiionov SSSR).

Baulin, V.V., Moscow, Nedra, 1985, 176p., In Russian with English table of contents enclosed. 50 refs.

Drilling, Geophysical surveys, Permafrost distribution, Aerial surveys, Permafrost physics, Petroleum industry, Permafrost thickness, Permafrost origin, Mapping, Charts, Geocryology.

40-1485

Surface temperature and sea ice of an Arctic polynya: North Water in winter.

Steffen, K., *Zürcher geographische Schriften*, 1985, No.19, 193p., With German and French summaries.

Refs. p.175-184.

Sea ice distribution, Ice conditions, Surface temperature, Ice mechanics, Marine meteorology, Remote sensing, Polynyas, Radiometry, Ice physics.

40-1486

Simulation of snowmelt-runoff in lowland and lower alpine regions of Switzerland.

Braun, L.N., *Zürcher geographische Schriften*, 1985, No.21, 166p., With German summary. Refs. p.103-109.

Snowmelt, Runoff, Snow accumulation, Snowfall, Snow water equivalent, Snow depth, Models, Ablation, Latent heat, Mountains, Switzerland.

40-1487

On the thermal regime of arctic glaciers.

Blatter, H., *Zürcher geographische Schriften*, 1985, No.22, 107p., With German summary. Refs. p.83-90.

Glacier heat balance, Thermal regime, Glacier surveys, Ice drills, Boreholes, Ice temperature, Models, Climatic changes, Glaciology, Polar regions.

40-1488

Study of ship ballasting and fluid systems for ice navigation. (Etude du ballastage et des tuyauteries connexes dans les navires naviguant en eaux glacées).

Gauthier, B., et al, *Canada. Department of Transport. Rapport*, Jan. 1983, No.TP 4239F, 10p., In French with English summary.

Page, D., Wyld, P.

Ice navigation, Ships, Freezing, Pipes (tubes), Tanks (containers), Cold weather operation, Design.

40-1489

Environmental assessment of calcium magnesium acetate as a road deicer.

LaPerriere, J.D., et al, *Alaska. Dept. of Transportation and Public Facilities. Research notes*, Aug. 1985, 5(2), 2p.

Sweet, L.R.

Ice removal, Snow removal, Road icing, Chemical ice prevention, Ice control, Environmental impact.

40-1490

Some recent developments in vibrating wire rock mechanics instrumentation.

Dutta, P.K., MP 1968, 1985, 12p., 20 refs. Presented at the 26th U.S. Symposium on Rock Mechanics, Rapid City, SD, June 26-28, 1985.

Rock mechanics, Cold weather operation, Measuring instruments, Vibration, Stresses, Models, Accuracy.

40-1491

Ballasting and anchoring of pipelines. (Ballastirovka i zakrepleniye truboprovodov).

Vasil'ev, N.P., Moscow, Nedra, 1984, 166p., In Russian with English table of contents enclosed. 12 refs.

Petroleum transportation, Gas pipelines, Permafrost beneath structures, Foundations, Anchors, Swamps, Peat, Roads.

40-1492

Brittleness of reinforced concrete structures under arctic conditions. (Teräsbetonirakenteiden kylmäauraus arktisissa oloissa).

Kivikkä, L., et al, Finland. *Technical Research Centre. Research reports*, 1985, No.369, MP 1969, 28 + 14p., In Finnish with English summary. 9 refs. Korhonen, C.

Winter concreting, Concrete structures, Loads (forces), Reinforced concrete, Concrete strength, Brittleness, Fracturing, Impact strength, Temperature effects.

When plain reinforcing bars are tested under impact load according to the steel standards their failure becomes brittle already at the arctic temperature region. However, when reinforced concrete structures are loaded with an impact load, the reinforcing bars are subjected to loading conditions very different from the test with the plain rebars, and this has a significant effect on the transition temperature.

40-1493

Surveying and trenching an iceberg scour, King William Island, Arctic Canada.

Woodworth-Lynas, C.M.T., et al, *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-Core publication*, Apr. 1985, No.85-11, Iceberg research, April 1985, No.10, p.3-8, 5 refs.

Day, T.E., Christian, D., Seidel, M.

Ice scouring, Icebergs, Trenching, Surveying, Bottom sediment, Bottom topography, Sedimentology, Grain size.

40-1494

Performance degradation of helicopter rotor in forward flight due to ice.

Korkan, K.D., et al, *Journal of aircraft*, Aug. 1985, 22(8), p.713-718, 8 refs.

Dadone, L., Shaw, R.J.

Aircraft icing, Helicopters, Ice accretion, Hoarfrost, Propellers, Navigation.

40-1495

Application of a radiative transfer model to bright icy satellites.

Burrati, B.J., *Icarus*, Feb. 1985, 61(2), p.208-217, 30 refs.

Extraterrestrial ice, Planetary environments, Photometry, Radiation, Scattering, Models.

40-1496

Numerical simulation of comet nuclei. 1. Water-ice comets.

Herman, G., et al, *Icarus*, Feb. 1985, 61(2), p.252-266, 42 refs.

Podolak, M.

Extraterrestrial ice, Planetary environments, Phase transformations, Latent heat, Ice crystal structure.

40-1497

Suitability of polyvinyl chloride pipe for monitoring TNT, RDX, HMX and DNT in groundwater.

Parker, L.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1985, SR 85-12, 27p., ADA-160 733, Refs. p.19-22.

Jenkins, T.F., Foley, B.T.

Pipes (tubes), Ground water, Water pollution, Water chemistry, Materials, Tests, Salinity.

A number of samples of commercial PVC groundwater monitoring pipe, which varied in schedule, diameter or manufacturer, were placed in contact with low concentrations of aqueous solutions of TNT, RDX, HMX and 2,4-DNT for 80 days under nonsterile conditions. Results indicated that there was some loss of TNT and HMX in the presence of PVC pipe compared to glass controls but that for the most part concentrations of analyte were equivalent between types of pipe. A second experiment was performed to determine if the losses were due solely to sorption or if biodegradation was also a factor. This experiment was done under a variety of groundwater conditions by varying salinity, initial pH and dissolved oxygen. The only case where there was increased loss of any substance because of the presence of PVC pipe was in the TNT solution under nonsterile conditions. This increased loss was thought to be associated with increased microbial degradation rather than sorption. Therefore, given the length of time of this experiment and the small amount of loss attributable to sorption, PVC groundwater monitoring pipe is acceptable for monitoring groundwater for these munitions. Several samples of PVC pipe were also leached with groundwater for 80 days and no detectable interferences were found by reversed phase HPLC analysis.

40-1498

Glaciers and hydropower potential of Johan Dahl Land, South Greenland.

Braithwaite, R.J., et al, Denmark. *Grönlands geologiske undersøgelse. Gletscher-hydrologiske meddelelser*, Sep. 1985, No.85/5, 20p., 19 refs.

Olesen, O.B.

Glacial hydrology, Runoff, Glacier melting, Snow accumulation, Electric power, Geologic maps, Climatic factors, Stream flow, Greenland—Johan Dahl Land.

40-1499

Separation of liquid mixtures in the freezing-out process—mathematical description and experimental verification.

Grado, L., et al, *International journal of heat and mass transfer*, Nov. 1985, 28(11), p.1983-1989, With French, German and Russian summaries. 5 refs. Orlicki, D.

Freeze drying, Liquids, Mass balance, Stefan problem, Supercooling, Mathematical models, Experimentation.

40-1500

Efficient algorithm for finite difference analyses of heat transfer with melting and solidification.

Hsiao, J.S., *American Society of Mechanical Engineers. Winter annual meeting. Heat Transfer Division. Pamphlet paper*, 1984, 84-WA/HT-42, 8p., 22 refs.

Heat transfer, Melting, Permafrost heat transfer, Stefan problem, Latent heat, Phase transformations, Thermal diffusivity, Ice prevention, Mathematical models, Convection.

40-1501

Experimental study of natural convection melting of ice in salt solutions.

Fang, L.J., et al, *American Society of Mechanical Engineers. Winter annual meeting. Heat Transfer Division. Pamphlet paper*, 1984, 84-WA/HT-55, 8p., 14 refs.

Cheung, F.B., Pedersen, D.R., Linehan, J.H.

Ice melting, Liquid solid interfaces, Solutions, Convection, Chemical analysis, Temperature variations.

40-1502

Transient freezing in pipe flow.

McMordie, R.K., et al, *American Society of Mechanical Engineers. Winter annual meeting. Heat Transfer Division. Pamphlet paper*, 84, WA/HT-103, 4p., 3 refs.

Prince, S.K.

Pipe flow, Pipeline freezing, Fluid flow, Turbulent flow, Laminar flow, Thawing, Temperature effects, Mathematical models, Computer programs.

40-1503

Frost growth and heat transfer in a parallel plate geometry.

O'Neal, D.L., et al, *American Society of Mechanical Engineers. Winter annual meeting. Heat Transfer Division. Pamphlet paper*, 1984, WA/HT-107, 7p., 10 refs.

Tree, D.R.

Ice crystal growth, Frost, Heat transfer, Air flow, Plates, Hoarfrost, Temperature effects, Thermocouples, Tests, Humidity.

40-1504

Soil freezing characteristics versus heat extraction rate.

Konrad, J.-M., *American Society of Mechanical Engineers. Winter annual meeting. Heat Transfer Division. Pamphlet paper*, 1984, 84-WA/HT-108, 7p., 13 refs.

Soil freezing, Heat transfer, Frost heave, Ice lenses, Heat loss, Grain size, Tests, Soil water.

40-1505

Predicting heave and settlement in discontinuous permafrost.

Coulter, D.M., *American Society of Mechanical Engineers. Winter annual meeting. Heat Transfer Division. Pamphlet paper*, 1984, 84-WA/HT-114, 8p., 21 refs.

Frost heave, Settlement (structural), Discontinuous permafrost, Frozen ground settling, Forecasting, Soil water migration, Soil temperature, Underground pipelines, Models, Seasonal variations.

40-1506

Performance of an airborne imaging 92/183 G<sub>Hz</sub> radiometer during the Bering Sea Marginal Ice Zone Experiment (MIZEX-WEST).

Gagliano, J.A., et al, *Millimeter wave technology II, Proceedings of the SPIE*, Vol.423, edited by J.C. Wiltse, Bellingham, Washington, SPIE—The International Society for Optical Engineering, 1983, p.164-170.

McSheehy, J.J., Cavalieri, D.J.

DLC TK7876.5.M55 1983  
Radiometry, Ice edge, Airborne equipment, Bering Sea.

40-1507

Greenland ice cap aeromagnetic survey 1983: acquisition of high sensitivity total field and gradient magnetic data.

Thorning, L., et al, Denmark. *Grönlands geologiske undersøgelse. Rapport*, 1984, No.120, p.32-36, 5 refs.

Bower, M., Hardwick, C.D., Hood, P.J.

Land ice, Magnetic surveys, Aerial surveys, Data processing, Greenland.

40-1508

Hydrological modelling in Greenland in connection with hydropower.

Braithwaite, R.J., Denmark. *Grönlands geologiske undersøgelse. Rapport*, 1984, No.120, p.90-94, 6 refs.

Glacial hydrology, Runoff, Models, Electric power, Computer programs, Greenland.

40-1509

Glaciological reconnaissance, mass balance measurements and mapping programmes in connection with Greenland hydropower.

Thomsen, H.H., Denmark. *Grönlands geologiske undersøgelse. Rapport*, 1984, No.120, p.95-99, 7 refs.

Glacier mass balance, Glacier surveys, Glacial hydrology, Photogrammetry, Mapping, Electric power, Drainage, Greenland.

40-1510

Location of two glacier surges in West Greenland.

Weidick, A., Denmark. *Grönlands geologiske undersøgelse. Rapport*, 1984, No.120, p.100-104, 6 refs.

Glacier surges, Glacier surveys, Aerial surveys, Velocity, Greenland.

40-1511

Glacier meltwater chemistry at two sub-polar glaciers in West Greenland.

Andreasen, J.-O., Denmark. *Grönlands geologiske undersøgelse. Rapport*, 1984, No.120, p.105-108, 5 refs.

Glacial hydrology, Meltwater, Water chemistry, Electrical resistivity, Water level, Streams, Glacier ablation, Greenland.

40-1512

Glaciological and climatological investigations at Qamanarsûp sermia, West Greenland.

Braithwaite, R.J., Denmark. *Grönlands geologiske undersøgelse. Rapport*, 1984, No.120, p.109-112, 9 refs.

Glacier surveys, Climatology, Glacial hydrology, Glacier ablation, Electric power, Mapping, Evaporation, Greenland.

40-1513

Glaciological activities in the Johan Dahl Land area, South Greenland, as a basis for mapping hydropower potential.

Clement, P., Denmark. *Grönlands geologiske undersøgelse. Rapport*, 1984, No.120, p.113-121.

Glacier surveys, Quaternary deposits, Glacial geology, Glacier ablation, Mapping, Electric power, Greenland.

40-1514

Deformation of laminated silt loam due to repeated freezing and thawing cycles.

Coutard, J.P., et al, *Earth surface processes and landforms*, July-Aug. 1985, 10(4), p.309-319, 35 refs.

Mücher, H.J.

Freeze thaw cycles, Loams, Geomorphology, Rheology, Soil structure, Microstructure, Soil creep, Frost action, Seasonal freeze thaw, Deformation.

40-1515

Application of photogeological mapping to studies of glacial history of South Spitsbergen.

Lindner, L., et al, *Earth surface processes and landforms*, July-Aug. 1985, 10(4), p.387-399, 26 refs.

Glacial deposits, Quaternary deposits, Glacial geology, Paleoclimatology, Moraines, Geological maps, Cirque glaciers, Photogrammetry, Norway—Spitsbergen.

40-1516

Scanning electron microscope study of bedrock microfractures in granites under high Arctic conditions.

Watts, S.H., *Earth surface processes and landforms*, Mar.-Apr. 1985, 10(2), p.161-172, 40 refs.

Frozen rocks, Fracturing, Frost shattering, Weathering, Scanning electron microscopy, Microstructure, Salinity.

- 40-1517**  
Formation of humus in the north of the European USSR. (Gumusoobrazovanie na severe evropeiskoi territorii SSSR). Archegova, I.B., Leningrad, Nauka, 1985, 137p., In Russian with English table of contents enclosed. Refs. p.132-136.  
Cryogenic soils, Soil composition, Organic soils, Frost action, Freeze thaw cycles, Frost penetration, Models, Experimentation, Soil formation, Soil chemistry.
- 40-1518**  
Meadows of northern Transbaikalia. (Luga severnogo Zabajkalia). Osipov, K.I., Novosibirsk, Nauka, 1985, 137p., In Russian with English table of contents enclosed. Refs. p.127-136.  
Alpine landscapes, Meadows, Cryogenic soils, Forest soils, Meadow soils, Plant ecology, Ecosystems, Biomass, Grazing.
- 40-1519**  
Radiation regime of mountain forests in Siberia. (Radiatsionnyi rezhim gornyykh lesov Sibiri). Sadovnichaya, E.A., Novosibirsk, Nauka, 1985, 125p., In Russian with English table of contents enclosed. Refs. p.117-123.  
Forest soils, Forest canopy, Plant ecology, Cryogenic soils, Solar radiation, Alpine landscapes, Slope orientation, Radiation balance, Soil temperature, Thermal regime.
- 40-1520**  
Cold bald-mountain deserts in subpolar regions of the Northern Hemisphere. (Kholodnye gol'tsovyye pustyni v pripoliarnykh gorakh severnogo polushariya). Kuvaev, V.B., Moscow, Nauka, 1985, 78p., In Russian with English table of contents enclosed. Refs. p.63-72.  
Alpine tundra, Deserts, Plant ecology, Ecosystems, Subpolar regions, Alpine landscapes.
- 40-1521**  
Mountain snowfall in Chugoku District, west Japan. Inoue, J., et al, *Seppyo*, Sep. 1985, 47(3), p.97-104, 19 refs., In Japanese with English summary.  
Okuyama, K., Watanabe, O., Fushimi, H.  
Snowfall, Snow cover distribution, Snow surveys, Mountains, Snow depth, Topographic effects, Snow crystals, Oxygen isotopes, Japan—Chugoku.
- 40-1522**  
Hydraulic conveying of snow. 6. Pressure drop of snow/water mixture in an elbow. Shirakashi, M., et al, *Seppyo*, Sep. 1985, 47(3), p.105-110, For Pt. 5 see 39-2474. 8 refs., In Japanese with English summary.  
Snow hydrology, Hydraulics, Fluid flow, Water pipes, Pressure.
- 40-1523**  
Disaster due to snow, ice and/or low temperature in Hokkaido. Ishikawa, N., et al, *Seppyo*, Sep. 1985, 47(3), p.111-123, 15 refs., In Japanese with English summary.  
Kobayashi, S., Horiguchi, K., Kinoshita, S.  
Snowdrifts, Road icing, Snow cover effect, Trafficability, Snowfall, Snow removal, Countermeasures, Japan—Hokkaido.
- 40-1524**  
Snow of Toyama. Tushima, K., *Seppyo*, Sep. 1985, 47(3), p.125-128, In Japanese. 16 refs., In Japanese with English summary.  
Snow accumulation, Snowfall, Snow surveys, Japan—Toyama.
- 40-1525**  
Higher aquatic plants in large lakes of the northwestern USSR. (Vysshaya vodnaya rastitel'nost' bol'shih ozer Severo-Zapada SSSR). Raspopov, I.M., Leningrad, Nauka, 1985, 197p., In Russian with abridged English table of contents enclosed. Refs. p.180-196.  
Algae, Icebound lakes, Littoral zone, Ice conditions, Ice melting, Aquatic plants, Plant ecology, Plant physiology, Ecosystems, Biomass.
- 40-1526**  
Design characteristics of grounds. (Raschetnye kharakteristiki gruntov). Kagan, A.A., Moscow, Stroiizdat, 1985, 247p., In Russian with abridged English table of contents enclosed. 51 refs.  
Piles, Industrial buildings, Clay minerals, Hydraulic structures, Bridges, Clay soils, Loams, Underground facilities, Sands, Gravel, Wettability, Foundations, Bearing strength.
- 40-1527**  
Adsorption of organic compounds on ice. Fedoseeva, V.I., et al, *Russian journal of physical chemistry*, Dec. 1980, No.12, p.1794-1796, For Russian original see 37-1532. 15 refs.  
Nechaev, E.A., Fedoseev, N.F.  
Ice surface, Adsorption, Snow surface, Organic nuclei, Ionization, Dispersions.
- 40-1528**  
Arctic drilling experience in Alaska. Miles, L.H., *Arctic news record*, May 1984, 3(1), p.13-15.  
Offshore drilling, Artificial islands, Offshore structures, Logistics, Exploration, Permafrost, Tundra, Oil wells, Environmental protection, United States—Alaska—Prudhoe Bay.
- 40-1529**  
Soviet northern sea route today. *Arctic news record*, May 1984, 3(1), p.30-32.  
Ice navigation, Icebreakers, Ice conditions, Northern Sea Route, Sea ice distribution, River ice.
- 40-1530**  
Soviet Arctic petroleum exploration and production. Bergsager, E., *Arctic news record*, May 1984, 3(1), p.33-35.  
Offshore drilling, Exploration, Seismic surveys, Petroleum products, Natural resources, Polar regions.
- 40-1531**  
Canadian Coast Guard prepares to build \$425 million icebreaker. *Arctic news record*, May 1984, 3(1), p.45-47.  
Icebreakers, Ice breaking, Cost analysis.
- 40-1532**  
Optimum strengthening of ship hull against Arctic ice. Ranki, E., *Arctic news record*, May 1984, 3(1), p.49-52, 11 refs.  
Ice navigation, Ice loads, Icebreakers, Ice conditions, Ships, Strength.
- 40-1533**  
Under the ice at the top of the world. Luton, G., *Arctic news record*, May 1984, 3(1), p.54-58.  
Subglacial observations, Photography, Ice cover, Logistics, Diving.
- 40-1534**  
Environmental impact of arctic building. (Arktisen rakentamisen ympäristöteknikka). Mansukoski, R., Finland. Technical Research Centre. *Research notes*, 1985, No.462, 61p., In Finnish with English summary. 39 refs.  
Buildings, Cold weather performance, Environmental protection, Natural resources, Environmental impact, Water supply, Waste treatment.
- 40-1535**  
Using Landsat data for snow cover/vegetation mapping. Merry, C.J., et al, MP 1975, Annual Department of Defense Mapping, Charting, and Geodesy Conference, 9th, 1984. Report, Washington, D.C., Defense Mapping Agency, [1984], p.II(140)-II(144), 7 refs.  
McKim, H.L.  
Snow cover distribution, Remote sensing, Vegetation, LANDSAT, Mapping, Snow depth, Snow water equivalent.
- 40-1536**  
Insulation sabotage by ice melt from Canada. Eakes, J., *Northern engineer*, May 1985, 17(1), p.4-6.  
Cold weather construction, Thermal insulation, Convection.
- 40-1537**  
Deteriorated building project at Qoudrastrom, Greenland. Korhonen, C., *Northern engineer*, Spring 1985, 17(1), p.7-10, 4 refs.  
Frost action, Buildings, Reinforced concretes, Thermal insulation, Strains, Damage, Walls, Temperature variations, Vapor pressure, Moisture, Greenland.
- 40-1538**  
U.S. permafrost delegation to the People's Republic of China. Brown, J., *Northern engineer*, Spring 1985, 17(1), p.11-16, 1 ref.  
Permafrost, Cold weather construction, Organizations, Geocryology, Engineering, China.
- 40-1539**  
Water, ice, land, and the Alaska climate. Bowling, S.A., *Northern engineer*, Spring 1985, 17(1), p.17-21.  
Climate, Ice cover effect, Sea ice distribution, Water temperature, Marine meteorology, United States—Alaska.
- 40-1540**  
Seeking the perfect floe. Ahlins, K., *Northern engineer*, Spring 1985, 17(1), p.22-26.  
Ice floes, Remote sensing, Ice conditions, Surveying, LANDSAT, Sea ice distribution.
- 40-1541**  
O.R.E. trackpoint acoustic range/bearing receiver evaluation. McKeown, D.L., *Canadian technical report of hydrography and ocean sciences*, Oct. 1984, No.47, 37p., 6 refs. Microfiche from the Public Archives, Canada.  
Acoustic measurement, Ice scoring, Moorings, Ships, Ocean bottom, Icebergs, Detection.
- 40-1542**  
Baffin Island Oilspill Project—Cape Hatt ice conditions. Dickins, D.F., et al, Edmonton, Alta., Dept. of Environment, Environmental Protection Service, Feb. 1981, 86p., Microfiche from the National Library of Canada, Microlog, No.82-1869, 11 refs.  
Brown, R.  
Oil spills, Ice conditions, Shores, Ice solid interface, Ice breakup, Ice melting, Beaches, Seasonal variations, Sea ice distribution.
- 40-1543**  
Winter 1981 trafficability tests of the USCGC Polar Sea, Volume 89, ice induced vibration measurements and development of a model for icebreaking excitation forces. Records and data. Glen, I.F., et al, Transport Canada report, TP4080E, Montreal, Quebec, Transportation Development Centre, Mar. 1982, 458p. Microfiche from the National Library of Canada, Microlog, No.84-0088.  
Majid, I., Tam, G., Menon, B.  
Ice navigation, Icebreakers, Ice loads, Vibration, Ice conditions, Trafficability, Mathematical models, Velocity.
- 40-1544**  
Electromagnetic measurements of multi-year sea ice using impulse radar. Kovacs, A., et al, U.S. Army Cold Regions Research and Engineering Laboratory, Sep. 1985, CR 85-13, 26p., ADA-160 737, 11 refs.  
Morey, R.M.  
Sea ice, Electromagnetic properties, Ice bottom surface, Marine geology, Geophysical surveys, Electrical resistivity, Brines, Dielectric properties.  
Sounding of multi-year sea ice, using impulse radar operating in the 80- to 500-MHz frequency band, has revealed that the bottom of this ice cannot always be detected. This paper discusses a field program aimed at finding out why this is so, and at determining the electromagnetic (EM) properties of multi-year sea ice. It was found that the bottom of the ice could not be detected when the ice structure had a high brine content. Because of brine's high conductivity, brine volume dominates the loss mechanism in first-year sea ice, and the same was found true for multi-year ice. A two-phase dielectric mixing formula, used by the authors to describe the EM properties of first-year sea ice, was modified to include the effects of the gas pockets found in the multi-year sea ice.
- 40-1545**  
Construction and calibration of the Ottawaquichee River model. Gooch, G., U.S. Army Cold Regions Research and Engineering Laboratory, Aug. 1985, SR 85-13, 10p. ADA-159 902.  
Ice jams, Ice breakup, River ice, Ice formation, Models, Flooding, Water supply, Tests.  
The Ottawaquichee River is located in west-central Vermont. This river was chosen for a physical hydraulic model using real ice. The model was built at a scale of 1:50 horizontal and 1:20 vertical. After problems with modeling bed roughness and operating the pump system were overcome, the tests went smoothly.
- 40-1546**  
Thermal breakup predictions on a regulated river. Andres, D.D., Water for resource development, Proceedings of the ASCE Hydraulics Division Specialty Conference, edited by D.L. Schreiber, New York, American Society of Civil Engineers, 1984, p.534-538, 11 refs.  
DLC TC401 W362 1984  
River ice, Ice breakup, Heat transfer, Ice models.

40-1547

**Mackenzie River breakup: Fort Simpson to Fort Good Hope, N.W.T.**

Kemp, T., et al, Water for resource development, Proceedings of the ASCE Hydraulics Division Specialty Conference, edited by D.L. Schreiber, New York, American Society of Civil Engineers, 1984, p.539-543, 6 refs.

Rivard, G., Gerard, R.

DLC TC401.W362 1984

**River ice, Ice breakup, Ice jams, Canada—Northwest Territories—Mackenzie River.**

40-1548

**Ice block stability.**

Daly, S.F., MP 1972, Water for resource development, Proceedings of the ASCE Hydraulics Division Specialty Conference, edited by D.L. Schreiber, New York, American Society of Civil Engineers, 1984, p.544-548, 5 refs.

DLC TC401.W362 1984

**River ice, Ice flows, Ice pressure.**

In this paper a simple formulation of the forces acting on an ice block in contact with an intact ice cover is presented. Underturning of the ice block is the assumed mechanism by which the block is swept under the ice cover. The data can be divided into two separate cases, a shallow water case and a deep water case. The conditions of instability for each case are determined empirically. The resultant prediction of the velocity at which the block is swept under the cover reproduces the data very well over the entire range of nondimensional ice block thicknesses. The "no-spill" condition used in earlier formulations is not required.

40-1549

**Simulation of river ice cover growth and decay.**

Greene, G.M., Water for resource development, Proceedings of the ASCE Hydraulics Division Specialty Conference, edited by D.L. Schreiber, New York, American Society of Civil Engineers, 1984, p.549-553, 5 refs.

DLC TC401.W362 1984

**River ice, Ice growth, Ice models, Thermodynamic properties, Environment simulation, Ice breakup, Canada—St. Lawrence River.**

40-1550

**Mathematical modeling of river ice processes.**

Shen, H.T., MP 1973, Water for resource development, Proceedings of the ASCE Hydraulics Division Specialty Conference, edited by D.L. Schreiber, New York, American Society of Civil Engineers, 1984, p.554-558, 16 refs.

DLC TC401.W362 1984

**River ice, Ice formation, Ice breakup, Analysis (mathematics).**

Computer modeling of flow and ice conditions in a river is an important element in the planning of water resources projects in northern regions. In this paper, a brief review on the present knowledge of formulating river ice process is given.

40-1551

**Reduction of intake flow due to ice rubbing and consolidation.**

Johnson, R.P., et al, Water for resource development, Proceedings of the ASCE Hydraulics Division Specialty Conference, edited by D.L. Schreiber, New York, American Society of Civil Engineers, 1984, p.564-568, 3 refs.

Cox, J.C., Machemehl, J.L.

DLC TC401.W362 1984

**Water intakes, Water flow, Freezepup.**

40-1552

**Importance of nonlinear wave interactions under ice.**

Green, T., III, Water for resource development, Proceedings of the ASCE Hydraulics Division Specialty Conference, edited by D.L. Schreiber, New York, American Society of Civil Engineers, 1984, p.569-573, 2 refs.

DLC TC401.W362 1984

**Ocean waves, Fast ice.**

40-1553

**Hydraulics of freezepup.**

Santeford, H.S., et al, Water for resource development, Proceedings of the ASCE Hydraulics Division Specialty Conference, edited by D.L. Schreiber, New York, American Society of Civil Engineers, 1984, p.574-578, 5 refs.

Alger, G.R.

DLC TC401.W362 1984

**River ice, Freezepup, Hydraulics, Models.**

40-1554

**Snowmelt runoff models for water supply forecasting.**

Martinez, J., Water for resource development, Proceedings of the ASCE Hydraulics Division Specialty Conference, edited by D.L. Schreiber, New York, American Society of Civil Engineers, 1984, p.659-663, 6 refs.

DLC TC401.W362 1984

**Snowmelt, Models, Water supply, Forecasting.**

40-1555

**Space observations for climate studies.**

Ohring, G., ed, *Advances in space research*, 1985, 5(6), Proceedings of Symposium 4 of the COSPAR twenty-fifth plenary meeting held in Graz, Austria, June 25-July 7, 1984, 396p., Refs. passim. For selected papers see 40-1556 through 40-1562 or F-32925-27, I-32921-24, I-32926-28, and J-32924.

Bolle, H.-J., ed.

**Snow cover effect, Cloud cover, Remote sensing, Albedo, Topographic effects.**

Of some 70 papers presented at the Symposium, 8 relate to Antarctica and discuss the following topics: basic atmospheric variables (temperature, pressure, winds, precipitation), climatologically important atmospheric constituents, clouds, the Earth's radiation budget, the oceans, the cryosphere, land surface processes, and space data.

40-1556

**Assessment of thin cirrus and low cloud over snow by means of the maximum likelihood method.**

Bolle, H.-J., *Advances in space research*, 1985, 5(6), p.169-175, 3 refs.

**Cloud cover, Snow cover effect, Remote sensing, Optical properties, Mountains, Spectra, Brightness.**

40-1557

**Satellite observations of sea ice.**

Cavalieri, D.J., et al, *Advances in space research*, 1985, 5(6), p.247-255, 27 refs.

Zwally, H.J.

**Polynyas, Pack ice, Sea ice distribution, Spacecraft, Remote sensing, Polar regions.**

An overview is presented of antarctic and Arctic sea ice studies using data from the Nimbus-5 ESMR and the Nimbus-7 SMMR passive microwave radiometers. Four years (1973-1976) of ESMR data for the antarctic ocean define characteristics of the seasonal cycle including regional contrasts and interannual variations. Major advances include the discovery of the Weddell polynya and the presence of substantial areas of open water in the antarctic winter pack ice. Regional differences in sea ice extent on time-scales of about a month are shown to be associated with variations in surface-wind fields. (Auth. mod.)

40-1558

**Characteristics of Arctic Ocean ice determined from SMMR data for 1979: case studies in the seasonal sea ice zone.**

Anderson, M.R., et al, *Advances in space research*, 1985, 5(6), p.257-261, 13 refs.

Crane, R.G., Barry, R.G.

**Spaceborne photography, Sea ice distribution, Remote sensing, Polar regions, Mapping, Microwaves, Ice thermal properties.**

40-1559

**Distant look at the cryosphere.**

Swithbank, C., *Advances in space research*, 1985, 5(6), p.263-274, Refs. 270-274.

**LANDSAT, Ice sheets, Glacier ice, Climatology.**

The space science contribution to the knowledge of glaciers and ice sheets is reviewed. Results show: whereas in global terms the cryosphere exists as a response to climate, over large areas it controls climate; while imaging spacecraft systems have proved easiest to interpret, microwave sensors with poor spatial resolution are able to distinguish transient and stable surface features that are invisible to the eye; imaging radars quite effectively describe sea ice, but precision altimetry is the only practicable method for monitoring changes in the total mass of ice on land. (Auth. mod.)

40-1560

**Satellite-derived snow and ice cover in climate diagnostic studies.**

Ropewski, C.F., *Advances in space research*, 1985, 5(6), p.275-278, 10 refs.

**Climate, Spacecraft, Sea ice distribution, Snow cover distribution, Remote sensing, Ice cover effect, Snow cover effect.**

Satellite-derived estimates of snow and sea-ice area have been produced weekly on an operational basis for over a decade. This paper presents a synopsis of recent climate research and climate diagnostics studies using these data at the National Weather Service's Climate Analysis Center (CAC). Currently available satellite products are evaluated in light of these studies and a set of desired characteristics for future satellite products are discussed. (Auth.)

40-1561

**Effects of concurrent snow and cloud cover on planetary albedo.**

Kaiser, D., et al, *Advances in space research*, 1985, 5(6), p.279-282, 7 refs.

Robock, A.

**Snow cover effect, Cloud cover, Albedo, Remote sensing, Topographic effects.**

40-1562

**On the derivation of radiation budget parameters at the surface from satellite measurements.**

Raschke, E., *Advances in space research*, 1985, 5(6), p.319-327, 14 refs.

**Solar radiation, Snow cover effect, Remote sensing, Albedo, Vegetation factors, Heat transfer, Surface structure, Topographic effects.**

40-1563

**Crystallomorphologic atlas of snow (Manual for snow-avalanche stations).** [Kristallo-morfologicheskii atlas snega (posobie dlia snegolavinnikh stantsii)].

Kolomyts, E.G., Leningrad, Gidrometeoizdat, 1984, 214p., In Russian. 10 refs.

**Hoarfrost, Blowing snow, Snow crystals, Depth hoar, Snow deformation, Metamorphism (snow), Firn, Snow crystal growth, Snow stratigraphy, Snowstorms, Snow crystal structure, Manuals, Sublimation, Crystal defects, Photography.**

40-1564

**Effective technical solutions for northern conditions.** [Effektivnye tekhnicheskie resheniia dlia uslovii Severa].

Gerdt, A.A., et al, *Stroitel'stvo truboprovodov*, Oct. 1985, No.10, p.13, In Russian.

Vel'chev, S.P.

**Pipelines, Pipe laying, Thermal insulation, Welding, Permafrost beneath structures, Construction equipment.**

40-1565

**Selection of optimal sequence for the construction sites of industrial pipelines.** [Vybór optimal'noi posledovatel'nosti stroitel'stva uchastkov promyslovnykh truboprovodov].

Fainburd, I.I., *Stroitel'stvo truboprovodov*, Oct. 1985, No.10, p.17-18, In Russian.

**Pipelines, Petroleum transportation, Swamps, Construction equipment.**

40-1566

**Self-propelling assembly for building pipelines on swamps.** [Samokhodnaia sistema dlia stroitel'stva truboprovodov na bolotakh].

Logvin, G.P., et al, *Stroitel'stvo truboprovodov*, Oct. 1985, No.10, p.18-19, In Russian. 4 refs.

Polozov, A.E.

**Construction equipment, Motor vehicles, Swamps.**

40-1567

**Thermal insulation materials for modular construction.** [Teplotzoliatsionnye materialy dlia komplektno-blochnogo stroitel'stva].

Aronov, V.A., et al, *Stroitel'stvo truboprovodov*, Oct. 1985, No.10, p.31-32, In Russian.

Stefurak, B.I.

**Pipeline insulation, Modular construction, Compressors, Thermal insulation, Petroleum transportation, Petroleum industry, Industrial buildings.**

40-1568

**Using geo-textiles for anchoring pipelines at design marks.** [Zakreplenie truboprovodov na proektnykh otmetkakh s ispol'zovaniem geotekstil'nykh materialov].

Sokolov, S.M., et al, *Stroitel'stvo truboprovodov*, Oct. 1985, No.10, p.33-34, In Russian.

**Floating structures, Underground pipelines, Anchors, Subsurface structures, Swamps, Construction materials, Permafrost beneath structures.**

40-1569

**Enclosures with thermo-perlite thermal insulation.** [Ograzhdaushchie konstruksii s termoperlitovoi teplozoliatsiei].

Varshavskii, I.P., *Stroitel'stvo truboprovodov*, Oct. 1985, No.10, p.35, In Russian.

**Houses, Wooden structures, Thermal insulation, Prefabrication, Panels.**

40-1570

**Convertible metal-sheet road.** [Inversionnaia metallicheskaia doroga].

Gushchin, V.I., et al, *Stroitel'stvo truboprovodov*, Oct. 1985, No.10, p.36-37, In Russian.

Zuev, B.E.

**Pipelines, All terrain vehicles, Roads, Metals, Construction materials, Transportation, Swamps.**

40-1571

Determining the application areas for automatic concrete pumps in the Far North. [Opredelenie oblastei primeneniia avtobetononasosov v raionakh Kralnego Severa], Korotov, E.V., et al, *Mekhanizatsiia stroitel'stva*, Nov. 1985, No.10, p.21-22, In Russian.

Etkin, N.V.

Concrete placing, Winter concreting, Pumps, Concrete aggregates, Mixers.

40-1572

Rock-earth-fill dam with sectional screen made of frozen ground panels. [Kamennno-zemlianaia plotina so sbornym ekranom iz predvaritel'no zamorozhen-nykh gruntovykh panelei], Zhilenkov, V.N., et al, *Energeticheskoe stroitel'stvo*, Oct. 1985, No.10, p.64-66, In Russian. 4 refs.

Shevchenko, N.I.

Hydraulic structures, Earth dams, Permafrost beneath structures.

40-1573

Using building foundations as natural electrical grounding in the Far North. [Ob ispol'zovanii fundamentov zdaniy v raionakh Kralnego Severa v kachestve estestvennykh zazemlitelei], Al'tshuler, E.B., et al, *Energeticheskoe stroitel'stvo*, Nov. 1985, No.11, p.78-80, In Russian. 2 refs.

Shevtsov, I.U.V.

Foundations, Electrical grounding, Buildings, Permafrost beneath structures.

40-1574

Construction of bilge wells on frost heaving ground. [Ustroistvo sbornykh kolodtsev na puchinykh gruntakh], Zaitsev, I.A., et al, *Gidrotekhnika i melioratsiia*, Apr. 1985, No.4, p.27-29, In Russian. 3 refs.

Sokolov, V.M.

Wells, Frost heave, Well casings, Water supply, Frost action, Freeze thaw cycles, Frozen ground.

40-1575

Cryohydrochemical peculiarities of wedge ice in the Yamal-Gydan Province. [Kriogidrokhimicheskie osobennosti povtorno-zhil'nykh l'dov I Amalo-Gydanskoi provintsi], Vasil'chuk, I.U.K., et al, *Moskovskoe obshchestvo ispytatelei prirody. Biulleten'*, May-June 1985, 60(3), p.114-120, In Russian. 12 refs.

Trofimov, V.T.

Ice wedges, Ice sampling, Ice salinity, Minerals, Ground ice, Ice composition.

40-1576

Permafrost thickness in the Oliktok Point, Prudhoe Bay and Mikkelsen Bay areas of Alaska. Osterkamp, T.E., et al, *Cold regions science and technology*, Sep. 1985, 11(2), p.99-105, 9 refs.

Petersen, J.K., Collet, T.S.

Permafrost thickness, Permafrost distribution, Subsea permafrost, Permafrost depth, Thermal conductivity, Ocean bottom, Tundra, United States--Alaska.

40-1577

Non-deterministic model of populations of iceberg scour depths.

Gaskill, H., et al, *Cold regions science and technology*, Sep. 1985, 11(2), p.107-122, 25 refs.

Nicks, L., Ross, D.

Ice scoring, Icebergs, Drift, Bottom topography, Ocean bottom, Models, Forecasting, Subsurface structures, Underground pipelines.

40-1578

Dynamic strain response of lake and sea ice to moving loads.

Squire, V.A., et al, *Cold regions science and technology*, Sep. 1985, 11(2), p.123-139, 22 refs.

Robinson, W.H., Haskell, T.G., Moore, S.C.

Lake ice, Sea ice, Strains, Ice cover strength, Dynamic loads, Static loads, Analysis (mathematics), Velocity, Vehicles, Measuring instruments, Antarctica--McMurdo Sound.

The results from two experiments to measure the strains due to a vehicle moving over ice are discussed in the context of theoretical work derived from existing solutions in the literature. The experiments took place on two very different types of ice; the lake ice of Fjorden in Norway, and sea ice near Scott Base in the Antarctic. In both cases, strain was measured directly by means of strainmeters developed specifically for use on ice. The existence of a critical velocity at which the strain is resonant is discussed, and using values derived from the data, a dispersion equation for free waves is solved in the supercritical domain to provide wavelength estimates. At subcritical speeds a moving static load calculation provides the equivalent theory. The experimental results for lake ice and sea ice are similar, although some differences do exist. (Auth. mod.)

40-1579

Photoelastic study of ice pressure in rock cracks. Davidson, G.P., et al, *Cold regions science and technology*, Sep. 1985, 11(2), p.141-153, 8 refs.

Nye, J.F.

Ice pressure, Frozen rocks, Cracks, Ice strength, Stresses, Optical properties, Shear stress, Elastic properties, Models, Analysis (mathematics), Ice water interface, Traction.

40-1580

Experimental studies on ice shells in Asahikawa.

Kokawa, T., *Cold regions science and technology*, Sep. 1985, 11(2), p.155-170, 19 refs.

Ice cover, Snow ice, Ice creep, Loads (forces), Snow loads, Models, Temperature distribution, Rheology.

40-1581

Deflection of a floating sea ice sheet induced by a moving load.

Takizawa, T., *Cold regions science and technology*, Sep. 1985, 11(2), p.171-180, 18 refs.

Floating ice, Dynamic loads, Ice sheets, Flexural strength, Ice deformation, Sea ice, Velocity.

40-1582

Snow in strong or weak temperature gradients. Part II: section-plane analysis.

Perla, R., *Cold regions science and technology*, Sep. 1985, 11(2), p.181-186, For Pt. I see 40-443. 15 refs.

Snow physics, Ice, Stereophotography, Brightness, Temperature gradients, Tests.

40-1583

Correspondence of creep data and constant strain-rate data for frozen silt.

Rein, R.G., Jr., *Cold regions science and technology*, Sep. 1985, 11(2), p.187-194, 10 refs.

Frozen ground mechanics, Soil creep, Strains, Stress strain diagrams, Temperature effects, Tests.

40-1584

Freezing concrete as a construction practice.

Suprenant, B.A., *Cold regions science and technology*, Sep. 1985, 11(2), p.195-197, 8 refs.

Concrete freezing, Concrete strength, Winter concreting, Freeze thaw cycles, Compressive properties, Tests.

40-1585

Remote sensing of snow accumulation.

Earl, W.M., et al, *Cold regions science and technology*, Sep. 1985, 11(2), p.199-202, 4 refs.

Grey, G.R., Conway, H., Abrahamson, J.

Snow accumulation, Remote sensing, Avalanche forecasting, Blowing snow, Snow depth, Ultrasonic tests.

40-1586

Behaviour of soils and structures in the Arctic.

Blanchard, D., et al, Congrès de l'Association Internationale des Ponts et Charpentes, Vancouver, Canada, Sep. 3-7, 1984, [1984], 4p., With French summary. 15 refs.

Fremont, M., Williams, P.J.

Frost heave, Frozen ground mechanics, Gas pipelines, Soil freezing, Ground ice, Soil water, Stresses, Mathematical models, Design.

40-1587

Review of methods for generating synthetic seismograms.

Peck, L., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1985, CR 85-10, 39p., ADA-159 128, Refs. p.36-39.

Soil mechanics, Seismology, Geophysical surveys, Wave propagation, Computer applications, Analysis (mathematics).

Various methods of generating synthetic seismograms are reviewed and examples of recent applications of the methods are cited. Body waves, surface waves, and normal modes are considered. The analytical methods reviewed include geometric ray theory, generalized ray theory (Cagniard-de Hoop method), asymptotic ray theory, reflectivity method, full wave theory, and hybrid methods combining ray theory and mode theory. Two numerical methods, those of finite differences and finite elements, and a hybrid method combining finite differences with asymptotic ray theory are described. Limitations on the application or validity of the various methods are stated.

40-1588

Resource potential of antarctic icebergs.

Wadhams, P., *Iceberg research*, Apr. 1985, No.10, p.9-23, 57 refs.

Iceberg towing, Water supply, Natural resources.

Following reviews of the history of the concept of the utilization of icebergs and their physical properties, the elements involved in a utilization scheme are laid out and considered. Once a suitable destination for a towed iceberg has been chosen, these technology factors must be developed: iceberg detection and selection; propulsion to the coastal destination; protection en route, if possible, and processing at the destination, comprising all the steps from the grounding to the outflow of water or electricity from the coastal processing plant. The many facets of these steps are discussed.

40-1589

Preliminary submersible observations of an iceberg pockmark on the Grand Banks of Newfoundland.

Collins, W.T., et al, *Iceberg research*, Apr. 1985, No.10, p.24-27, 5 refs.

Barrie, J.V.

Bottom topography, Icebergs, Ice scoring, Ocean bottom, Canada--Newfoundland--Grand Banks.

40-1590

Preservation and protection of soils from erosion in mountainous areas of Central Asia. [Okhrana i zashchita pochvy ot erozii v gornykh raionakh Srednei Azii],

Khanazarov, A.A., Gornye territorii i ikh osvoenie (Mountain regions and their economic development) edited by A.M. Mamytov, Frunze, Ilim, 1985, p.3-15, In Russian. 4 refs.

Mudflows, Mountain soils, Forest soils, Soil erosion, Frost action, Environmental protection, Freeze thaw cycles, Solifluction.

40-1591

Evaluating the transformation of snow runoff from swamps during drainage. [Opyt otsenki preobrazovaniia snegovogo stoka s bolotnykh massivov pri ikh osushenii],

Pakutin, A.V., *Leningrad. Universitet. Vestnik. Geologiya-geografiia*, 1985, No.7, p.102-108, In Russian. 17 refs.

Land reclamation, Swamps, Drainage, Meltwater, Snow water equivalent.

40-1592

Geochemical characteristics of soil cover in the north-western nonchernozem zone of the RSFSR. [Geokhimicheskaiia kharakteristika pochvennogo pokrova Severo-Zapadnoi Nechernozemnoi zony RSFSR],

Matinian, N.N., et al, *Leningrad. Universitet. Vestnik. Biologiya*, 1985, No.10, p.91-99, In Russian. 10 refs.

Cryogenic soils, Soil composition, Soil chemistry, Taiga, Forest soils.

40-1593

Modern technique of conducting land reclamation work in freezing weather. [Peredovoi opyt proizvodstva meliorativnykh rabot v zimnii period],

Meshkov, V.M., *Mekhanizatsiia stroitel'stva*, Dec. 1985, No.12, p.22-24, In Russian.

Soil freezing, Hydraulic structures, Earth dams, Thermal insulation, Peat, Earth fills, Excavation, Frost penetration, Drainage, Blasting, Frozen ground.

40-1594

Rates of sediment disruption by sea ice as determined from characteristics of dated ice gouges created since 1975 on the inner shelf of the Beaufort Sea, Alaska.

Barnes, P.W., et al, *U.S. Geological Survey. Open-file report*, 1985, No.85-463, 35p. + figs., 20 refs.

Rearn, D.M.

Ice scoring, Bottom topography, Icebergs, Ocean bottom, Sediment transport, Sea ice, Beaufort Sea.

40-1595

Ice loads and ship response to ice, USCG Polar Class 1982/83 deployment.

St. John, J.W., et al, *Transportation Development Centre. Transport Canada. Report*, Dec. 1984, TP 6039E, 94p., With French summary. 25 refs.

Daley, C., Blount, H., Glen, I.F.

Icebreakers, Ice loads, Ships, Impact strength, Ice conditions, Design criteria, Velocity, Ice pressure.

40-1596

Experimental determination of factors affecting loads imposed on propellers in ice.

Bulat, V., et al, *Transport Canada. Report*, July 1985, TP 6812 E, var. p., With French summary. 20 refs.

Majid, I., Goossens, L.

Ice navigation, Icebreakers, Ice loads, Propellers, Loads (forces), Ships, Models, Ice pressure, Tests.

40-1597

MIZLANT 81 data report, results of an oceanographic cruise to the Greenland Sea, October-November 1981.

Bourke, R.H., et al, *U.S. Navy. Naval Postgraduate School, Monterey, California. Report*, Aug. 1985, NPS 68-85-020, 67p., 3 refs.

Paquette, R.G.

Ice conditions, Oceanographic surveys, Ice edge, Icebreakers, Underwater acoustics, Sea water, Ocean currents, Velocity, Salinity, Greenland Sea.

40-1598

Arch effects in glaciers. [Effets de voûte dans les glaciers]. Ott, B., Zurich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen, 1985, No.80, 198p., In French with German and English summaries. Refs. p.190-195.

Stresses, Glacier surveys, Glacier flow, Ice deformation, Subglacial caves, Crevasses, Glacier beds, Geomorphology, Rheology, Tensile properties.

40-1599

Balance of measurements of the Nivose Station 1981/82, 1982/83, 1983/84. [Bilan des mesures des stations Nivose année 81/82—année 82/83—année 83/84]. Castets, P., et al, France. Direction de la Météorologie. Etablissement d'études et de recherches météorologiques. Note de travail, 1985, No.131, 48p., In French.

Lafeuille, J., Pougatch, E., Sudul, M. Snow surveys, Snow accumulation, Meteorological data, Weather stations, Mountains, Statistical analysis.

40-1600

Val Gagne pavement insulation experiment. Louie, T.M., et al, Ontario, Ministry of Transportation and Communications, [1983], 50p., Prepared for presentation to the Transportation Research Board Annual Meeting 1983, Washington, D.C. For other versions see 37-1295 and 38-2588. 15 refs.

Phang, W.A., Chisholm, R.A. Pavements, Thermal insulation, Frost heave, Freeze thaw cycles, Frost penetration, Frost resistance, Cellular plastics, Soil water, Temperature distribution, Design, Countermeasures.

40-1601

Development and testing of a portable ice thickness measuring device.

Hudson, R., et al, Transport Canada. Report, July 1985, TP 6816E, 31p. + appends., With French summary. 16 refs.

Pann, J., Day, T. Ice cover thickness, Acoustic measurement, Floating ice, Ice acoustics, Resonance, Computer applications.

40-1602

Alaska water resources evaluation: 5-year plan, 1985-1989.

Alaska. Dept. of Natural Resources. Division of Geological and Geophysical Surveys, June 1985, 47p. U.S. Geological Survey. Water Resources Division. Water reserves, Surface waters, Ground water, Water supply, Rivers, Glacial hydrology, Lakes, Runoff, Hydrology, United States—Alaska.

40-1603

Effect of temperature on organic carbon-texture relationships in Mollisols and Aridisols.

McDaniel, P.A., et al, Soil Science Society of America. Journal, Nov.-Dec. 1985, 49(6), p.1486-1489, 18 refs. Munn, L.C.

Organic soils, Soil texture, Soil chemistry, Temperature effects, Grasses.

40-1604

Arctic news record, Fall-winter 1984/85. Arctic news record, Dec. 1984, 3(3), 63p.

Ice navigation, Offshore structures, Artificial islands, Marine geology, Ice loads, Offshore drilling, Sea ice, Icebergs, Ice conditions, Remote sensing, Arctic Ocean.

40-1605

Study of the properties of steel used at low temperatures. [Etude des propriétés des aciers pour emploi aux basses températures].

Almond, G., et al, Transport Canada. Report, July 1982, TP 3790F, 13p., In French with English summary.

Gauthier, G., Wright, A.E. Cryogenics, Brittleness, Low temperature tests, Cracking (fracturing), Steels, Welding, Ships, Offshore structures.

40-1606

Essence of biology in the North.

Kallio, P., Nordia, 1984, 16(2), p.53-65, Refs. p.62-65. Environments, Vegetation, Cold tolerance, Animals, Acclimatization, Climatic factors, Cold weather survival, Subpolar regions, Seasonal variations.

40-1607

Adaptation and evolution at the northern limits of life.

Kallio, P., Acta Universitatis Oulu. Scripta academica, 1984, No.1, Origin and purpose of life. 25th Anniversary Lectures, University of Oulu, Finland, Apr. 8-May 24, 1983, p.131-150, Refs. p.145-150.

Environments, Cold tolerance, Trees (plants), Acclimatization, Climatic factors, Subpolar regions, Seasonal variations, Mountains, Photosynthesis.

40-1608

Organization of the nivometric network of the Piedmont Region. [L'organizzazione della rete nivometrica della Regione Piemonte].

Bovo, S., et al, Neve e valanghe, June 1985, No.1, p.6-16, 3 refs., In Italian.

Coccolo, V., Debrando, V. Snow surveys, Nival relief, Organizations, Meteorological data, Italy—Alps.

40-1609

Windbreak structures; experimental measures for the protection of S.S.638, Giu Pass. [Opere frangivento. Intervento sperimentale a protezione della S.S.638 del Passo Giu].

Balzaretti, P., Neve e valanghe, June 1985, No.1, p.19-28, 3 refs., In Italian.

Windbreaks, Snow fences, Avalanche engineering, Protection, Avalanche formation, Italy—Alps.

40-1610

Artificial triggering of avalanches, using explosives. [Il distacco artificiale delle valanghe mediante l'impiego di esplosivi].

Cresta, R., Neve e valanghe, June 1985, No.1, p.30-37, In Italian.

Avalanche triggering, Explosives, Avalanche formation, Countermeasures, Italy—Alps.

40-1611

Local avalanche commissions in the Trento Autonomous Province. [Le Commissioni Locali Valanghe nella Provincia Autonoma di Trento].

Caola, E., Neve e valanghe, June 1985, No.1, p.38-44, In Italian.

Avalanches, Snow surveys, Organizations, Countermeasures, Avalanche formation, Italy—Alps.

40-1612

Regional and provincial avalanche services in the Italian sector of the Alps. [I servizi valanghe regionali e provinciali dell'arco alpino italiano].

Gagnati, A., Neve e valanghe, Oct. 1984, No.0, p.7-17, 3 refs., In Italian.

Avalanche forecasting, Weather stations, Avalanche formation, Mountains, Italy—Alps.

40-1613

Forecasting avalanche danger. [La previsione dei rischi di valanghe].

Marboutey, D., Neve e valanghe, Oct. 1984, No.0, p.18-26, 15 refs., In Italian.

Avalanche forecasting, Avalanche formation, Damage, Snow accumulation, Countermeasures, Weather stations, Mountains, Snow mechanics, Italy—Alps.

40-1614

1983/84 snow season in the Italian Alps. [La Stagione nevosa 1983-1984 sull'arco alpino].

Borghi, S., Neve e valanghe, Oct. 1984, No.0, p.27-36, 1 ref., In Italian.

Snow accumulation, Avalanche formation, Snow mechanics, Snowfall, Meteorological charts, Italy—Alps.

40-1615

Data gathering and processing and special measurement methods. [Raccolta ed elaborazione dei dati. Metodi di misura speciali].

Föhn, P.M.B., Neve e valanghe, Oct. 1984, No.0, p.37-47, 15 refs., In Italian.

Avalanche formation, Snow accumulation, Snow stratigraphy, Snow strength, Data processing, Weather stations, Cohesion, Penetration tests, Measuring instruments, Italy—Alps.

40-1616

Dynamics of glaciers and the development of glacial lakes in the Caucasus. [Dinamika lednikov i razvitiye glial'skiykh ozer Bol'shogo Kavkaza].

Eremov, I.O.V., et al, Geograficheskoe obshchestvo SSSR. Izvestiya, July-Aug. 1985, 117(4), p.336-341, In Russian. 22 refs.

Panov, V.D. Mudflows, Glacial hydrology, Avalanche deposits, Glacial lakes, Moraines, Nivation, Mountain glaciers, Alpine landscapes, Plant ecology, Glacier melting, Lichens.

40-1617

New data on Upper Cenozoic deposits of the sea-side lowlands in Yakutia. [Novye dannye o verkhnegoizotskikh otlozheniyakh Primorskikh nizmenostey I Akutii].

Rybakova, N.O., et al, Moskovskoe obshchestvo isspytateley prirody. Biulleten'. Otdel geologicheskikh, Mar.-Apr. 1985, 60(2), p.83-88, In Russian. 12 refs.

Kolesnikov, S.F. Frozen fines, Permafrost origin, Permafrost dating, Clays, Palynology, Hydrothermal processes, Loams, Frost penetration.

40-1618

Prospects for using cooling installations for cooling gas in pipeline sections passing through permafrost zones. [Perspektivy ispol'zovaniya kholodil'nykh ustanovok dlia okhlazhdeniya gaza na uchastkakh gazoprovodov, prokladnyayemykh v zonakh mnogoletnei merzloty].

Kochergin, V.I., Obzornaya informatsiya. Gazovaya promyshlennost'. Seriya transport i khraneniye gaza, 1985, No.8, 49p., In Russian with English table of contents enclosed. 48 refs.

Gas pipelines, Permafrost beneath structures, Artificial cooling, Peat, Frost heave, Permafrost control.

40-1619

Studying snow for indication of industrial pollution. [Issledovanie snega dlia indikatsii tekhnogenogo zagryazneniya].

Dvornikova, L.L., et al, Leningrad. Universitet. Vestnik. Geologiya-geografiya, 1985, No.14, p.38-45, In Russian with English summary. 4 refs.

Gorbovskaia, A.D., Seliverstov, I.U.P. Snowfall, Wastes, Absorption, Pollution, Snow composition, Snow cover distribution, Soil pollution, Wind factors, Vegetation factors, Water pollution.

40-1620

Representation of mountain glacier relief on maps. [Izobrazheniye rel'efa gornykh lednikov na kartakh].

Petrova, T.M., Leningrad. Universitet. Vestnik. Geologiya-geografiya, 1985, No.14, p.83-87, In Russian with English summary.

Topographic maps, Glacier surfaces, Mountain glaciers, Slope orientation, Moraines, Mapping, Snow cover distribution.

40-1621

Diatoms in some samples of fast ice from eastern Antarctica. [Diatomovye vodorosli v nekotorykh probakh pribrezhnogo l'da Vostochnoi Antarktidy].

Nikolaev, V.A., et al, Leningrad. Universitet. Vestnik. Geologiya-geografiya, 1985, No.14, p.90-93 + 8 plates, In Russian with English summary. 9 refs.

Dmitrash, Zh.A. Fast ice, Cryobiology, Ice deterioration, Algae, Biomass, Ice formation, Ice composition, Sea ice distribution, Ice physics, Ice structure.

Influence of biogenic factors on the formation and deterioration of Antarctic sea ice was studied on microflora obtained from fast-ice samples, collected in the fall of 1978, in the Davis, Soriaev and Cosmonauts seas, and representing different age-stages of the ice. The results revealed a close relationship between taxonomic composition and population of microscopic algae and the continuously varying physico-chemical and structural properties of the ice.

40-1622

Glaciology of Svalbard. [Gliatsiologiya Shpitsbergen].

Kotliakov, V.M., ed, Moscow, Nauka, 1983, 200p., In Russian with English table of contents and summary. 290 refs.

Glacier ice, Glacier beds, Radio echo soundings, Bottom topography, Snow cover distribution, Ice cover thickness, Snow water equivalent, Subglacial observations, Ice volume, Norway—Svalbard.

40-1623

Engineer troops of the Soviet army 1918-1945. [Inzhenernye voyska sovet'skoi armii 1918-1945].

Egorov, E.P., et al, Moscow, Voenizdat, 1985, 488 p., In Russian with English table of contents enclosed. Military engineering operations of 1918-45 are compared to the present.

Military engineering, Military equipment, Military facilities, Logistics, Military transportation, Military research, Fortifications, Screening, Blasting, Roads, Bridges, Crossings, Camouflage.

40-1624

Comparing the geographic structure of various types of flora from the tundra zone of Taymyr Peninsula (Arctic Central Siberia). (Svravnenie geograficheskoi struktury konkretnykh flor Taymyra iz tundrovoi zony (arkticheskaia sredniaia Sibir')). Sokolova, M.V., *Botanicheskii zhurnal*, Sep. 1985, 70(9), p.1224-1232, In Russian. 12 refs.

Tundra, Plant ecology, Ecosystems, Arctic landscapes.

40-1625

Sphagnum mosses in the northwestern RSFSR. (O sfagnovykh mkhakh Severo-Zapada RSFSR). Boch, M.S., et al, *Botanicheskii zhurnal*, Oct. 1985, 70(10), p.1337-1346, In Russian. Refs. p.1345-1346.

Kuz'mina, E.O.

Mosses, Plant ecology, Ecosystems, Subarctic regions, Forest soils, Tundra, Swamps, Finland, USSR—Karelia.

40-1626

Ecology of some moss species growing on forest soils of the Muysk Basin (the BAM zone). (Ekologiya nekotorykh vidov mkhov napochvennogo pokrova v lesakh Muiskoi kotloviny (zona BAMa)). Otniukova, T.N., *Botanicheskii zhurnal*, Oct. 1985, 70(10), p.1373-1380, In Russian. 22 refs.

Forest soils, Discontinuous permafrost, Mosses, Plant ecology, Alpine landscapes, Ecosystems, Cryogenic soils.

40-1627

Ice island experiment—ice strength and crystallography. Prodanovic, A., et al, *Exxon Production Research Company. Report*, Sep. 1981, EPR.44PS.81, 53p., 3 refs.

Petrie, D.H.

Ice islands, Ice strength, Artificial islands, Ice crystal structure, Ice density, Ice salinity, Ice cores, Stress strain diagrams, Compressive properties, United States—Alaska—Prudhoe Bay.

40-1628

Ice island experiment—summer monitoring report. Prodanovic, A., *Exxon Production Research Company. Report*, Sep. 1981, EPR.43PS.81, 89p., 10 refs.

Ice islands, Artificial islands, Ice physics, Ice cores, Ice loads, Ice breakup, Ice deformation, Ablation, Ocean waves, Ice temperature, Water temperature, Ice density, Photography, Seasonal variations, United States—Alaska—Prudhoe Bay.

40-1629

Biennial report, 1983-84. Alaska. University. Geophysical Institute, Fairbanks, University of Alaska, (1985), 203p., Refs. p.161-177.

Glacier surveys, Permafrost, Sea ice, River ice, Lake ice, Geophysical surveys, Meteorology, Geology, Pollution, Cost analysis, United States—Alaska.

40-1630

Natural convection near 4°C in a horizontal water layer heated from below. Blake, K.R., et al, *Physics of fluids*, Nov. 1984, 27(11), p.2608-2616, 21 refs.

Poulikakos, D., Bejan, A.

Fluid mechanics, Heat transfer, Convection, Water temperature, Density (mass/volume), Heating, Mathematical models, Water pollution.

40-1631

MIZEX: Physical and biological phenomena in the boundary zone of arctic sea ice. (MIZEX. Fizikalische und biologische Phänomene in der Randzone des arktischen Meereses). Augstein, E., *Geowissenschaften in unserer Zeit*, July 1984, 2(4), p.137-142, In German. 9 refs.

Sea ice distribution, Ice edge, Ice structure, Seasonal variations, Sea water, Plankton.

40-1632

Greenland and Arctic region—resources and security policy. Bach, H.C., et al, Copenhagen, 1982, 79p., 2nd edition. Refs. 78-79.

Taaholt, J.

Ice navigation, Natural resources, Military facilities, Transportation, Climatic factors, Polar regions, Greenland.

40-1633

Segmented model testing in ice—development of techniques. Final report and summary report. Nawwar, A.M., et al, *Transportation Development Centre. Report*, June 1984, Sep. 1984, TP 5701E, TP 5702E, 143p. + 22p., With French summaries. 28 refs., 4 refs.

Howard, D.

Ice navigation, Ice loads, Ice breaking, Ships, Models, Ice pressure, Tests, Metal ice friction.

40-1634

Principles and dilemmas of designing durable house envelopes for the North. Latta, J.K., *National Research Council, Canada. Building practice note*, Mar. 1985, No.52, 27p.

Cold weather construction, Houses, Condensation, Countermeasures, Water vapor, Design, Temperature effects.

40-1635

Technical evaluation of combined gas turbine and steam turbine propulsion system for Canadian Arctic icebreaking duty. Thompson, E.W., et al, *Transport Canada. Report*, Mar. 1983, TP 451E, 11p., With French summary.

Arctic Pilot Project, Inc., Calgary, Alberta

Propellers, Icebreakers, Design, Computer applications, Ships.

40-1636

Stabilized grounds for rural roads of Siberia. (Ustabilennyye grunty dlia vnutrikhoziaistvennykh dorog Sibiri). Lintser, A.V., et al, *Avtomobil'nye dorogi*, Aug. 1985, No.8, p.7-8, In Russian.

Matfukovich, S.I., Iurchenko, V.A.

Roads, Gravel, Cements, Soil cement, Sands, Clays, Bitumens, Frost action, Frost resistance.

40-1637

Concretes of increased frost resistance, containing slag-portland cement. (Betony povyshennoi morozostoičnosti na shlakoportlandsemente). Kirichenko, O.A., et al, *Avtomobil'nye dorogi*, Aug. 1985, No.8, p.15-16, In Russian.

Mel'nikhenko, P.A., Valiavskii, V.I., Ryl'tseva, T.N.

Winter concreting, Concrete freezing, Concrete admixtures, Cements, Frost resistance.

40-1638

Slipperiness of pavements and driving safety. (Skol'zhost' pokryti i bezopasnost' dvizheniia). Malyshev, A.A., et al, *Avtomobil'nye dorogi*, Aug. 1985, No.8, p.17-18, In Russian.

Khristolubov, I.N.

Roads, Winter maintenance, Glaze, Ice accretion, Rubber ice friction, Rubber snow friction, Snow cover structure, Trafficability.

40-1639

Forms of recesses for landscapes with large snowdrifts. (Formy vyemok dlia mestnostei s bol'shim snegopereenosom). Filippov, I.V., *Avtomobil'nye dorogi*, Sep. 1985, No.9, p.5-6, In Russian.

Roads, Snowdrifts, Roadbeds, Design, Winter maintenance, Snowstorms, Snow accumulation.

40-1640

Track-laying tractor for Siberian taiga. (Puteproladchik dlia taizhnykh r-*onov Sibiri*). Rudnev, V.K., et al, *Avtomobil'nye dorogi*, Sep. 1985, No.9, p.14, In Russian.

Bondarev, P.V.

Taiga, Tracked vehicles, Roads, Snow removal, Roadbeds, Construction equipment, Embankments, Excavation, Frozen ground.

40-1641

Regularities governing temperature transitions in tar, tar-cements and bituminous concrete. (Zakonomernosti temperaturnykh perekhodov v degtykh, degtevykh viazhushchikh i degtebetone). Zolotarev, V.A., et al, *Avtomobil'nye dorogi*, Sep. 1985, No.9, p.20-21, In Russian. 5 refs.

Zhdaniuk, V.K., Psiurnik, V.A.

Roads, Pavements, Bituminous concretes, Frost action, Heat transfer, Frost resistance, Concrete freezing, Concrete strength, Resins.

40-1642

Calculating economic effectiveness of winter construction. (Raschet ekonomicheskoi effektivnosti zimnikh rabot). Nosich, I.A., et al, *Avtomobil'nye dorogi*, Sep. 1985, No.9, p.24-25, In Russian. 5 refs.

Kravchenko, V.G., Izumov, N.V.

Roads, Roadbeds, Cold weather construction, Cold weather performance, Pavements, Cost analysis.

40-1643

Accelerated artificial ice buildup on ice crossings. (Uskorennoe namorazhivanie lediannykh pereprav). Zaitsev, A.V., et al, *Avtomobil'nye dorogi*, Oct. 1985, No.10, p.13, Ice (construction material).

Kameniar, I.A.N.

Artificial freezing, Ice crossings, Ice accretion, River crossings, Ice strength.

40-1644

Influence of climatic conditions on the effectiveness of concrete work. (Vliianie klimaticheskikh uslovii na effektivnost' betonnykh rabot). Vinogorskiĭ, N.S., *Beton i zhelezobeton*, Oct. 1985, No.10, p.13, In Russian.

Winter concreting, Concrete hardening, Concrete freezing, Concrete admixtures, Cost analysis.

40-1645

Increasing the effectiveness of lignosulfonate admixtures. (Povyshenie effektivnosti dobavok lignosulfonatov). IUsupov, R.K., et al, *Beton i zhelezobeton*, Oct. 1985, No.10, p.14-15, In Russian. 4 refs.

Gol'dshteyn, V.L.

Air entrainment, Concrete admixtures, Concrete freezing, Frost resistance.

40-1646

Casing-off wells drilled in permafrost. (Osobennosti krepnenii skvazhin v mnogoletnei merzlotе). Zeltser, P.A., *Gazovaya promyshlennost'*, Mar. 1985, No.3, p.22-23, In Russian.

Drilling, Well casings, Cements, Petroleum industry, Permafrost control, Continuous permafrost.

40-1647

Yamburg—the polar region of gas industry. (Yamburg—Zapoliarnyi region gazovoi promyshlennosti). Batovskii, V.D., et al, *Gazovaya promyshlennost'*, June 1985, No.6, p.5-7, In Russian.

Portianko, N.G.

Gas pipelines, Transportation, Polar regions, Industrial buildings, Continuous permafrost, Heating, Petroleum industry, Ventilation, Cost analysis.

40-1648

Selection of gas-cooling regime for restoring permafrost beneath gas pipelines. (Vybór režimov okhlazhdeniia gaza pri vosstanovlenii merzloty v osnovanii gazoprovoda). Koshelev, A.A., et al, *Gazovaya promyshlennost'*, Aug. 1985, No.8, p.32-34, In Russian.

IAnysheva, I.M.

Gas pipelines, Permafrost beneath structures, Permafrost bases, Permafrost control, Soil erosion, Ground thawing.

40-1649

Development of construction in rural areas of Siberia, the Far East and the Far North. (Razvitiie sel'skogo stroitel'stva v raionakh Sibiri, Dal'nego Vostoka i Krai nego Severa). Lisovskii, M.F., *Biulleten' stroitel'noi tekhniki*, Aug. 1985, No.8, p.38-40, In Russian.

Residential buildings, Lightweight concretes, Houses, Wooden structures, Municipal engineering, Metals, Construction materials, Permafrost beneath structures.

40-1650

Radioglaciology. Bogorodskii, V.V., et al, Dordrecht, Holland, D. Reidel Publishing Co., 1985, 254p., For Russian original see 38-11 or 13F-28564. Refs. passim.

Bentley, C.R., Godwin, G.E.

Glacier ice, Airborne radar, Spaceborne photography, Radar echoes, Ice cover thickness, Photointerpretation, Geophysical surveys, Lasers, Gravimetric prospecting, Seismic surveys, Electromagnetic prospecting, Ice physics, Ice structure.

Multyear results of design and practical use of radar methods for investigations of the Earth's ice covers are summarized. The basis of the method is given and characteristics of radar systems for study of main phenomena in glaciers are described. The new most important data on glacier thickness, internal structure, movement, temperature regime and others are also summarized. The important physical fundamental data, i.e. previously unknown electromagnetic properties of ice sheets of Antarctica, Greenland and the Arctic are presented. (Auth.)

40-1651

Early stages of structure formation in young growths of clear-cut areas of taiga. (Nachalnyi period formirovaniia struktury molodniakov na vyрубkakh v taizhnot' zoney). Pegov, I.A., *Lesovedenie*, 1985, No.3, p.55-60, In Russian with English summary.

Taiga, Forestry, Forest soils, Vegetation, Cryogenic soils.

40-1652

Phase transformations of water in wintering twigs of Siberian Larch. (O fazovom perekhode vody v zimuiushchikh pobegakh listvennitsy Sibirskoi). Mironov, P.V., et al. *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Lesnoi zhurnal*, 1985, No.5, p.9-12. In Russian. 6 refs.

Loskutov, S.R., Levin, E.D. Plant ecology, Plant physiology, Frost action, Taiga, Vegetation, Cryogenic soils.

40-1653

Methodological foundations of cryolithology. (Metodologicheskie osnovy kriolitologii). Popov, A.I. *Moscow. Universitet. Vestnik. Seriya 5 Geografiia*, Sep.-Oct. 1985, No.5, p.3-9. In Russian. Frost penetration, Permafrost origin, Permafrost hydrology, Permafrost distribution, Climatic factors, Topographic effects, Hydrothermal processes, Frost action.

40-1654

Phase boundary movements in the lithosphere. (O dvizhenii fazovykh granits v litosfere). Gliko, A.O. *Akademiia nauk SSSR. Doklady*, 1985, 284(6), p.1333-1336. In Russian. 8 refs. Stefan problem, Phase transformations, Heat transfer.

40-1655

Phase differences in annual course of thermal characteristics of oceans, continents, atmosphere and ice. (Fazovyie razlichia v godovom khode termicheskikh kharakteristik okeanov, materikov, atmosfery i l'dov). Lappo, S.S., et al. *Akademiia nauk SSSR. Doklady*, 1985, 284(6), p.1471-1476. In Russian. 10 refs. Gulev, S.K.

Land ice, Phase transformations, Sea ice, Thermal properties, Soil air interface, Seasonal changes, Air water interactions, Heat transfer, Atmospheric physics.

40-1656

Formation of hydrocarbon gas hydrates under the bottom of seas and oceans. (Uglevodorodnoe gazogidratobrazovanie pod dnom morei i okeanov). Trotsiuk, V.I.A., et al. *Akademiia nauk SSSR. Doklady*, 1985, 284(4), p.976-978. In Russian. 7 refs. Nemirovskaia, I.A.

Clathrates, Natural gas, Hydrates, Hydrocarbons.

40-1657

Determination of the melting point of ice in porous glass in relation to the size of the pores. Venzel', B.I., et al. *Journal of engineering physics*, Mar. 1985 (Pub. Sep. 85), 48(3), p.346-350. Translated from *Inzhenerno-fizicheskii zhurnal*. 12 refs. Egorov, E.A., Zhizhenkov, V.V., Kleiner, V.D.

Ice melting, Melting points, Glass, Porous materials, Construction materials, Frost resistance, Tests.

40-1658

Ultrasonic Doppler speed indicator for icebreakers. (Indicateur de vitesse Doppler à ultrasons pour brise-glaces). Roberge, R. *Transport Canada. Report*, June 1985, TP 6786 F, 19p. + appends. In French with English summary.

Ice navigation, Icebreakers, Ultrasonic tests, Radar echoes, Velocity, Ice conditions, Noise (sound).

40-1659

Binary nucleation at low temperatures. Zahoransky, R.A., et al. *Journal of chemical physics*, Dec. 15, 1985, 83(12), p.6425-6431, 35 refs.

Peters, F. Low temperature tests, Nucleation, Supersaturation, Solutions, Temperature effects.

40-1660

Analysis of heat losses from the central heat distribution system at Fort Wainwright. Phetteplace, G.E., MP 1980, [1982], 20p., Unpublished manuscript; presented at the Symposium on Utilities Delivery in Cold Regions, Edmonton, Alberta, May 25-26, 1982. 5 refs.

Heat transmission, Heat loss, Heating, Heat sources, Degree days, Temperature effects, Analysis (mathematics), United States—Alaska—Fairbanks.

40-1661

Glacial geomorphology and dynamics in Soviet Karelia interpreted by means of satellite imagery. Punkari, M., *Fennia*, 1985, 163(1), p.113-153, Refs. p.150-153.

Glacial geology, Geomorphology, Landforms, Ice mechanics, Paleoclimatology, Remote sensing, Moraines, LANDSAT, Mapping, Photography, USSR—Karelia.

40-1662

Effect of scintillation on the active microwave remote-sensing sensors.

Chang, A.T.C., et al. *International journal of remote sensing*, 1985, 6(7), p.1231-1240, 26 refs.

Fang, D.J. Microwaves, Remote sensing, Scintillation, Radio waves, Backscattering, Solar activity.

40-1663

Winter temperatures of a palas bog in Finnish Lapland. (Palsasuon talvillämpötiloista utsoella). Seppälä, M., *Oulanka reports*, 1983, No.4, p.20-24. In Finnish with English summary. 6 refs.

Frost mounds, Swamps, Surface temperature, Soil temperature, Air temperature, Snow cover effect, Seasonal variations, Finland—Lapland.

40-1664

Oceanology of the antarctic continental shelf. Jacobs, S.S., ed. *American Geophysical Union. Antarctic research series*, 1985, Vol.43, 312p., Refs. passim. For individual papers see 40-1665 through 40-1677 or E-32972, E-32987, F-32975, F-32982 through F-32985, J-32973, J-32974, J-32976 through J-32981, and J-32986.

Sea ice, Polynyas, Ice shelves.

Volume 43 of the Antarctic Research Series is devoted to the sea of the deep continental shelf, which play an important climatic role in sea ice production, deep ocean ventilation and mass balance of the Antarctic ice sheet. Sixteen contributions from several disciplines include analyses of observations made from satellites, ships, glacial ice, sea ice and from instruments moored to the ocean floor. High-resolution profiling equipment, automatic long-term recordings and chemical tracers provide the data base for new insights and models of the ocean circulation. Color plates and an accompanying GEBCO circum-Antarctic map portray the continental shelf in relation to the glaciated continent, the sea ice and the surrounding southern ocean.

40-1665

GEBCO bathymetric Sheet 5.18 (circum-Antarctic). Vanney, J.R., et al. *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.1-3, 7 refs. Johnson, G.L.

Maps, Ice shelves.

This article describes the large antarctic map accompanying the volume in which the article appears. The map represents the antarctic chart of a global series of bathymetric charts that was completed in 1982. Sheet 5.18 is one of 18. In constructing Sheet 5.18, all available sounding data were used from all available sources. The antarctic continental shelf as revealed by the GEBCO sheet exhibits typical high-latitude morphology. It has been deeply incised by glacial activity with both coast parallel and normal shelf troughs. The antarctic shelf is deep, 500-900 m, which probably is a reflection of depression by the thick inland ice sheet.

40-1666

Circulation and water masses on the southern Weddell Sea shelf.

Foldvik, A., et al. *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.5-20, 32 refs.

Gammelsrød, T., Tørresen, T.

Ice shelves, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf, Antarctica—Weddell Sea.

Circulation and water masses on the southern Weddell Sea shelf are discussed, based upon observations from three summer expeditions. The circulation is dominated by two cyclonic gyres, one in the Filchner Depression and one off Ronne Ice Shelf. In both areas a relatively warm ( $T > -1.3^\circ\text{C}$ ) southward flow of Modified Weddell Deep Water and a cold ( $T < -1.9^\circ\text{C}$ ) northward flow of Ice Shelf Water are observed. Ice Shelf Water spills over the sill of the Filchner Depression and is observed on the continental slope as a narrow bottom-trapped current. Based on current meter observations at the sill, the overflow is estimated to be 1 million  $\text{cu m/s}$ , with no appreciable seasonal variation. Weddell Sea Bottom Water forms by mixing between Ice Shelf Water and Weddell Deep Water on the slope. (Auth.)

40-1667

Interaction between ice shelf and ocean in George VI Sound, Antarctica.

Potter, J.R., et al. *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.35-58, Refs. p.57-58. Paren, J.G.

Maps, Meltwater, Ice shelves, Isotopes, Antarctica—George VI Ice Shelf.

George VI Ice Shelf floats on warmer water than any other ice shelf in the Antarctic. Profiles of temperature ( $T$ ) and salinity ( $S$ ) taken in the vicinity of the northern ice front show a linear  $T$ - $S$  dependence confirming a thermodynamic model of ice melting in Circumpolar Deep Water and indicate that thermohaline convection is the principal mixing process. Profiles demonstrate that the melting ice has an oxygen isotope value of -20 per mil with respect to Standard Mean Ocean Water. An

integration of accumulation and isotope data over the ice catchment confirms that this is the mean isotope ratio of present-day accumulation. Both summer and long-term measurements show that currents are weak except at the western margin of the northern ice front where a northward jet conveys some 50,000 million  $\text{cu m/s}$  of water into Marguerite Bay. This leads to a simple circulation model for the northern part of George VI Sound, Circumpolar Deep Water is advected under the ice shelf at depth, upwells transferring heat which melts the ice and then collects in a northward outflow gathered to the west by Coriolis force. The circulation is driven by the melting process which causes the upwelling of warmer water from greater depths. A salt and energy balance shows that the outflow conveys some 16  $\text{cu km/yr}$  of ice melt. (Auth. mod.)

40-1668

Origin and evolution of water masses near the antarctic continental margin: evidence from H<sub>2</sub>O-18/H<sub>2</sub>O-16 ratios in seawater.

Jacobs, S.S., et al. *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.59-85, Refs. p.81-85. Fairbanks, R.G., Horibe, Y.

Sea ice, Ice sheets, Ice shelves, Mass balance, Antarctica—Ross Sea, Antarctica—Ross Ice Shelf.

Measurements of the temperature, salinity and oxygen isotope content of seawater in the Ross Sea and beneath the Ross Ice Shelf are used to define water types and differentiate between melting, freezing, and mixing processes. The Ross Sea and Weddell Sea are found to have remarkably similar temperature, salinity and delta O-18 characteristics, and tongues of relatively warm and very cold water that traverse the continental shelves between the deep ocean and glacial ice. Ventilation of the deep ocean at the slope front adjacent to the continental margin is most strongly influenced by low salinity shelf water. High salinity shelf water resulting from sea ice freezing in shore leads and polynyas in the western Ross Sea may regulate the subsurface flow of warm water onto the continental shelf. The water, ice, marine precipitation, heat, salt and delta O-18 budgets for the circumpolar Antarctic continental shelf are outlined. (Auth. mod.)

40-1669

Preliminary observations from long-term current meter moorings near the Ross Ice Shelf, Antarctica. Pillsbury, R.D., et al. *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.87-107, Refs. p.106-107. Jacobs, S.S.

Sea ice distribution, Ice shelves, Ice melting, Ice formation, Moorings, Antarctica—Ross Ice Shelf, Antarctica—Ross Sea.

Presented is an overview of current and temperature measurements at 200-500 m depths near the Ross Ice Shelf from late Jan. to mid Aug. 1978 and from Feb. 1983 through Jan. 1984. These observations are interpreted in relation to the thermohaline stratification along the ice shelf in Jan. 1984. Nine instruments were moored for one year between 172 W and 176 W. Current directions were remarkably constant through 1983 with mean annual southward or westward components from 5 to 9  $\text{cm/s}$ . Maximum current speeds exceeded 40  $\text{cm/s}$ . Velocity spectra showed significantly higher energy levels during the winter period of sea ice formation along the ice shelf. Temperatures ranged from a Mar. minimum of  $-2.19^\circ\text{C}$  in Ice Shelf Water to a July maximum of  $-0.14^\circ\text{C}$  during a midwinter period of warm intrusions. Mean annual temperatures between  $-1.41$  and  $-1.52^\circ\text{C}$ ,  $0.5$  to  $0.75^\circ\text{C}$  above the *in situ* freezing point, were obtained from six instruments that spanned the 20 sq km warm core. Preliminary transport estimates indicate that the ocean supplies sufficient heat to melt about 150  $\text{cu km/yr}$  of ice off the base of the Ross Ice Shelf. (Auth. mod.)

40-1670

Tidal rectification below the Ross Ice Shelf, Antarctica.

MacAyeal, D.R., *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.109-132, Refs. p.131-132.

Ice water interface, Ice shelves, Ice melting, Sea water freezing, Tidal currents, Antarctica—Ross Ice Shelf, Antarctica—Ross Sea.

Numerical tidal simulation of the Ross Sea shows that periodic tidal currents drive steady barotropic circulations having magnitudes of the order to 0.01 m/s along the sides of several topographic bumps and ridges formed by the combined relief of the seabed and ice shelf base. The sensible heat transport implied by this flow is estimated to induce 0.5 m/yr basal melting over approximately 50,000 sq km of the ice shelf area closest to the ice front. As a means of flushing the entire sub-ice cavity, tidal rectification is too weak and too spatially sporadic to account for geochemically derived renewal rates. (Auth.)

40-1671

Evolution of tidally triggered meltwater plumes below ice shelves.

MacAyeal, D.R., *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.133-143, 22 refs.

Meltwater, Ice shelves, Ice melting, Tidal currents, Antarctica—Ross Ice Shelf, Antarctica—Ross Sea.

Theory suggests that tidally induced vertical mixing and tidal rectification may trigger basal melting in two widely separated regions of the sub-ice cavity in the Ross Sea. Vertical separation of two meltwater masses, observed off the Ross Ice Shelf, provides geochemical evidence useful for testing models of sub-ice shelf meltwater plume evolution which is used here to examine two meltwater plumes originating at 1,000 m depth and at 250 m depth. Results indicate that melting along the plume path driven by turbulent entrainment of ambient seawater strongly controls the net vertical penetration of the plume as it flows along the sloping ice shelf base. Entrainment-driven melting along the plume path is possible under present climatic conditions, but at depths greater than approximately 550 m. Such melting may be possible at all depths, however, if climatic change were to warm the ambient water column by approximately 0.6°C. (Auth.)

40-1672

**Winter oceanography of McMurdo Sound, Antarctica.**

Lewis, E.L., et al, *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.145-165, 24 refs.

Perkin, R.G.

**Ice water interface, Ice shelves, Ice melting, Antarctica—McMurdo Sound, Antarctica—Ross Ice Shelf.**

Analysis of current meter and conductivity/temperature/depth (CTD) data give an overall picture of the winter circulation in McMurdo Sound. The geostrophic currents relative to 700 dbar indicate a large anticyclonic eddy which produces upwelling and a northward moving current at Cape Royds. South of Cape Royds, the upper 200 m of the sound are heavily influenced by northward flowing, cold, low-salinity water which is advected from under the Ross Ice Shelf and exits McMurdo Sound on the extreme western side. Water coming from the eastern part of the ice shelf edge is caught up in a relatively complex flow, partially due to the blockage effect of the Erebus Glacier Tongue. Profiles showing extremely high supercooling near the ice/water interface give indications of correspondingly high salt fluxes related to the relief of supercooling. (Auth. mod.)

40-1673

**Observations in the boundary layer under the sea ice in McMurdo Sound.**

Mitchell, W.M., et al, *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.167-176, 15 refs.

Bye, J.A.T.

**Boundary layer, Sea ice, Ice cover, Ice melting, Sea water freezing, Antarctica—McMurdo Sound.**

High-resolution observations of current (three components), temperature, and conductivity at two levels just below the seasonal sea ice are presented for two sites in McMurdo Sound in Jan. 1977. The dynamics of the melting process are found to differ between the two sites. At the eastern site near McMurdo Station, relatively high melting rates occurred due to the southward advection of relatively warm oceanic water, whereas at the western site in the region of oceanic advection from under the Ross Ice Shelf, melting was slight and due to surface intrusions of coastal meltwater probably from the Hobbs Glacier. The frequency spectra indicated a buoyancy subrange for the velocity components and a fine structure range for the density at frequencies greater than the Brunt-Väisälä frequency and the probable existence of internal wave spectra at lower frequencies. (Auth.)

40-1674

**Recurring, atmospherically forced polynya in Terra Nova Bay.**

Kurtz, D.D., et al, *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.177-203, Refs. p.199-201.

Bromwich, D.H.

**Ice formation, Sea ice distribution, Polynyas, Antarctica—Terra Nova Bay.**

The Terra Nova Bay polynya is a large, stable, annually recurring feature in the western Ross Sea which markedly influences sea ice dynamics and physical oceanography in that region. Seasonal and winter time series satellite data document the Drygalski Ice Tongue blocking effect, and suggest that decreases in polynya area reflect rapid sea ice freezing in response to local weakening of katabatic wind action. The latter finding means that synoptic forcing is important only during periods of major polynya expansion, and explains why this polynya's areal fluctuations are weakly correlated with the zonal component of the surface geostrophic wind in the western Ross Sea. Ice production in Terra Nova Bay amounts to 10% of the total formed over the Ross Sea continental shelf. Brine rejected during surface freezing of seawater may play a key role in maintaining the HSW. (Auth. mod.)

40-1675

**Antarctic offshore leads and polynyas and oceanographic effects.**

Zwally, H.J., et al, *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.203-226, 35 refs.

Conrath, J.C., Gordon, A.L.

**Sea ice, Polynyas, Ice cover, Ice formation, Antarctica—Ross Sea.**

Sixteen study areas located over the continental shelf are analyzed to provide time series of brightness temperature within each study area, and the derived area of open water. Examination of the synoptic pressure maps in the Ross Sea indicates that the intermittent formation of a polynya near the ice shelf front is strongly influenced by the synoptic winds. Other polynya areas appear to be located offshore of major outlet glaciers that are locations of enhanced katabatic winds. In all cases, the intermittent increases in open water during the polynya events are superimposed on a significant background of nearshore open water, which averages about 19% during the winter period from Mar. 17 through Nov. 11. In some locations, more open water is observed during the winter period than in the summer days Nov. 12 through Mar. 16. It is concluded that ice formation in leads and polynyas over the shelf is likely to be a primary factor in the production of saline shelf water and ultimately in bottom water formation. (Auth. mod.)

40-1676

**Passive microwave study of polynyas along the antarctic Wilkes Land coast.**

Cavalieri, D.J., et al, *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.227-252, 28 refs.

Martin, S.

**Polynyas, Heat transfer, Ice formation.**

Satellite passive microwave radiance data are used to derive the open water area of six polynyas located along the Wilkes Land coast for a 3-month period during the austral 1979 winter. A comparison of the temporal variability of the six polynyas over the 3 winter months with a sequence of surface pressure maps shows that the polynyas are largely influenced by the synoptic events. Correlation between the polynya open water areas and wind speeds at the nearest coastal weather station (Dumont d'Urville, Casey, Mirny) to each feature is for most cases significant at the 95% confidence level and as high as 0.75 for the 3-month period. The station data also allowed calculation of the total heat transfer, ice production, and amount of salt rejected to the ocean for each of the polynyas. Results strongly suggest that the coastal polynyas are the sources of the brine which generates the dense shelf water, and thus contribute to the formation of Antarctic Bottom Water. (Auth. mod.)

40-1677

**Some effects of ocean currents and wave motion on the dynamics of floating glacier tongues.**

Holdsworth, G., *American Geophysical Union. Antarctic research series*, 1985, Vol.43, Oceanology of the antarctic continental shelf, edited by S.S. Jacobs, p.253-271, Refs. p.269-271.

**Icebergs, Floating ice, Glacier tongues, Ice shelves, Antarctica—Amery Ice Shelf, Antarctica—Larsen Ice Shelf.**

A survey is made of several super glacier tongues (SGTs) that have existed in the past or are still in existence along the antarctic coastline. The dynamics of these SGTs are examined, principally in the context of relationships to ocean currents and wave motion. A discussion of some iceberg calving mechanisms is presented with the aim of attempting to physically explain several cases of documented SGT calving events. It is concluded that both ocean currents and waves, directly or indirectly, play an important role in the dynamics of SGTs. (Auth.)

40-1678

**Heat and mass transfer between water-bodies and the atmosphere under natural conditions. [Тепло- и массообмен между водоемом и атмосферой в естественных условиях].**

Panin, G.N., Moscow, Nauka, 1985, 206p., In Russian with English table of contents enclosed. Refs. p.194-205.

**Air water interactions, Heat transfer, Mass transfer, Surface waters, Surface temperature.**

40-1679

**Detailed distribution of dissolved and particulate organic matter in the Arctic Ocean and comparison with other oceanic regions.**

Gordon, D.C., Jr., et al, *Deep-sea research*, Oct. 1985, 32A(10), p.1221-1232, 36 refs.

Cranford, P.J.

**Sea water, Water chemistry, Suspended sediments, Sea ice.**

40-1680

**Formation of dense bottom water in the Barents Sea. Midtun, L., *Deep-sea research*, Oct. 1985, 32A(10), p.1233-1241, 6 refs.**

**Sea water, Freezing, Salinity, Density (mass/volume), Brines, Barents Sea.**

40-1681

**Cold regions practice and research in Canada.**

Crawford, C.B., et al, National Research Council, Canada. Division of Building Research. DBR paper, No.1287, International Conference on Engineering and Development in Northern Regions, Sapporo, Japan, Jan. 31-Feb.2, 1983. Proceedings, Sapporo, (1985), p.59-91, With French summary. 23 refs.

Gold, L.W.

**Permafrost beneath structures, Engineering, Heat loss, Frost action, Transportation, Ice islands, Snow loads, Avalanche formation, Cold weather construction, Countermeasures, Canada.**

40-1682

**Heat recovery from primary effluent using heat pumps.**

Phetteplace, G.E., et al, MP 1978, CLIMA 2000 Conference, Copenhagen, Aug. 1985. Proceedings, Vol.6, (1985), p.199-203, 1 ref.

Ueda, H.T., Martel, C.J.

**Heat recovery, Waste treatment, Water treatment, Sewage, Heating, Heat pumps.**

40-1683

**Comparative field testing of buried utility locators.**

Big, S.R., et al, MP 1977, Hanover, NH, U.S.A. CRREL, (1984), 25p., Presented at the APWA Public Works Conference and Equipment Show, Edmonton, Alberta, May 13-15, 1984. Unpublished manuscript. 1 ref.

Phetteplace, G.E., Henry, K.S.

**Underground facilities, Utilities, Magnetic surveys, Maintenance, Detection, Damage, Tests, Radar echoes.**

Locating buried utilities for repair, servicing or prevention of damage is often necessary when excavation is to be conducted in a particular area. The most widely used methods for detection of buried facilities are magnetic induction, magnetometry, and radiofrequency tracking. Downward-looking radar units designed specifically for utility location are in the development stages. Comparative field tests of eight locators were conducted at West Point and Newburgh, New York, over various types of buried utilities including iron and steel pipe, cable, vitreous tile pipe and plastic pipe.

40-1684

**Heating enclosed wastewater treatment facilities with heat pumps.**

Martel, C.J., et al, MP 1976, Hanover, NH, U.S.A. CRREL, (1982), 20p., Presented at the Symposium on Utilities Delivery in Cold Regions, Edmonton, Alberta, May 25-26, 1982. Unpublished manuscript. 13 refs.

Phetteplace, G.E.

**Waste treatment, Water treatment, Underground facilities, Underground pipelines, Heating, Heat pumps.**

40-1685

**National issues and research priorities in the Arctic. National Research Council. Polar Research Board, Washington, D.C., July 1985, 124p., Refs. passim.**

**Glaciology, Hydrology, Research projects, Geology, Permafrost, Geophysical surveys, Engineering, Polar regions.**

40-1686

**Simplified design procedures for heat transmission system piping.**

Phetteplace, G.E., MP 1979, CLIMA 2000 Conference, Copenhagen, Aug. 1985. Proceeding, Vol.6, (1985), p.451-456, 5 refs.

**Heat transmission, Underground pipelines, Water pipelines, Heat loss, Design, Cost analysis, Analysis (mathematics).**

40-1687

**ARCTIC: ship hull resistance to ice loads. (ARCTIC: tenue de la coque aux charges des glaces), Glen, I., et al, *Transport Canada. Report*, Feb. 1985, TP 5681F, 26p., In French with English summary. 2 refs.**

Nawwar, A.M., Brown, R.

**Ice loads, Ships, Ice solid interface, Ice navigation, Stresses, Damage, Strength.**

40-1688

**Simple design procedure for heat transmission system piping.**

Phetteplace, G.E., MP 1982, University Energy Conversion Engineering Conference, 19th, San Francisco, CA, Aug. 19-24, 1984. Proceedings, Vol.3, American Nuclear Society, 1984, p.1748-1752, 4 refs.

**Cost analysis, Heat transmission, Pipelines, Loads (forces), Design, Analysis (mathematics), Heating, Cooling, Heat loss.**

Piping systems represent the major portion of the total cost of most district heating applications and constitute a barrier to their widespread implementation. This paper presents a methodology for least cost design of these systems under realistic

conditions of varying load. Cost-effective design of piping for district heating and cooling applications requires careful consideration of the various components of the owning and operating costs. These costs are included in the formulation of an optimization problem to determine the minimum cost design on a yearly cycle basis.

40-1689

Study of the fragility of iceberg ice and fresh-water columnar ice. [Etude du comportement fragile de la glace d'iceberg et de la glace colonnaire d'eau douce]. Lachance, J., et al. Quebec (City) Université Laval. Département de génie civil. Rapport, June 1985, GCS-85-03, 246p., In French. Refs p.209-215.

Michel, B. Ice physics, Brittleness, Icebergs, Ice crystal structure, Fracturing, Ice strength, Snow cover effect, Glacier ice, Compressive properties, Transformations, Traction, Experimentation.

40-1690

Geofabrics span voids. Connor, B., Alaska. Department of Transportation and Public Facilities. Research notes, Nov. 1985, 5(5), 2p.

Embankments, Ground thawing, Ice wedges, Materials, Ice melting, Roadbeds, Damage, Countermeasures.

40-1691

SIDS phase I final report. Brown, W.P., Polar Research Laboratory, Inc., Santa Barbara, CA. Technical report, July 20, 1982, PRL TR 41, 20p. + append.

Ice cover thickness, Acoustic measurement, Floating ice, Ice bottom surface, Electronic equipment, Design, Velocity, Measuring instruments, Arctic Ocean.

40-1692

Calculation of temperature and pressure dependence of elastic constants for alun. Senoo, M., et al. Japan Society of Mechanical Engineers. Bulletin, Oct. 1985, 28(244), p.2228-2233, 17 refs.

Matsumuro, A. Low temperature tests, Metals, Elastic properties, Pressure, Stress strain diagrams, Analysis (mathematics).

40-1693

Heat transport of powder as the subject of cryogenic insulation. Takegoshi, E., et al. Japan Society of Mechanical Engineers. Bulletin, Oct. 1985, 28(244), p.2352-2359, 9 refs.

Hirasawa, Y., Imura, S. Heat transfer, Thermal conductivity, Thermal insulation, Cryogenics, Low temperature tests, Thermal radiation, Experimentation, Temperature effects.

40-1694

Forested Arctic: evidence from North Greenland. Funder, S., et al. Geology, Aug. 1985, 13(8), p.542-546, 31 refs.

Abrahamsen, N., Bennike, O., Feyling-Hanssen, R.W. Forest tundra, Paleoclimatology, Marine deposits, Forest lines, Environments, Animals, Pleistocene, Greenland.

40-1695

Improved drainage and frost action criteria for New Jersey pavement design—Volume 2. Experimental subsurface drainage applications. Kozlov, G.S., et al. U.S. Federal Highway Administration (Report), Jan. 1984, FHWA/JN-84/012, New Jersey Dept. of Transportation Report 84-012-7740, 112p., PB84-234 467, 22 refs.

Mottola, V., Mehlichick, G. Pavements, Frost heave, Subsurface drainage, Road maintenance, Frost action, Design.

40-1696

Investigation of the waters of the East Greenland Current. Tunncliffe, M.D., U.S. Navy. Naval Postgraduate School, Monterey, California. Report, Sep. 1985, NPS 68-85-02-136p., ADA-161 215, 70 refs.

Ocean currents, Icebreakers, Ice mechanics, Sea ice distribution, Ice edge, Water temperature, Salinity, Velocity, Computer applications, Greenland Sea.

40-1697

Meteorite concentration by ice flow. Van Heeswijk, M., Ohio. State University, Columbus. Institute of Polar Studies. Report, 1984, No.83, 67p., 16 refs.

Ice models, Ice dating, Glacier ablation, Ice creep, Falling bodies, Antarctica—Allan Hills.

Calculations show that ice flow concentrates meteorites and supplies ice as old as 400,000 yrs at the ablation surface near the Allan Hills. A model for these phenomena is developed in this paper, recognizing three mechanisms that act to concen-

trate the meteorites: some meteorites fall directly onto the collecting site, others are transported by the glacier, from the accumulation to the ablation zone, and those present at the ablation surface are crowded due to horizontally-compressive surface strain rates. Conditions favoring large meteorite concentrations and old ice are described. (Auth. mod.)

40-1698

Improving the organization of work and recreation of naval crews. [Sovershenstvovanie organizatsii truda i otdykha plovostavey].

Panin, I.U.I., ed. Leningrad. Tsentral'nyi nauchno-issledovatel'skii institut morskogo flota. Trudy, 1984, No.293, 80p., In Russian. For selected article see 40-1699.

Ice navigation, Work time standards, Icebreakers, Arctic Ocean.

40-1699

Complex approach to the scientific organization of naval crew activities in the Arctic. [Kompleksnyi podkhod k nauchnoi organizatsii truda plovostavey v Arktike].

Matsevich, L.M., Leningrad. Tsentral'nyi nauchno-issledovatel'skii institut morskogo flota. Sbornik nauchnykh trudov, 1984, No.293, p.11-15, In Russian.

Icebreakers, Ice navigation, Arctic Ocean.

40-1700

Advanced types of ships and their ice navigation properties. [Perspektivnye tipy sudov, morekhodnye i ledovye kachestva].

Panin, I.U.I., ed. Leningrad, Transport, 1985, 137p., In Russian. For selected papers see 40-1701 through 40-1705. Refs. passim.

Ships, Ice breaking, Icebreakers, Ice navigation, Transportation, Arctic Ocean.

40-1701

Technical and economic justification for using small-size cargo-lighters in the North. [Tekhniko-ekonomicheskoe obosnovanie malogo likhterovoza dlia Severa].

Miroshnichenko, I.P., et al. Perspektivnye tipy sudov, morekhodnye i ledovye kachestva (Advanced types of ships and their ice navigation properties) edited by I.U.I. Panin, Leningrad, Transport, 1985, p.3-17, In Russian.

Ice breaking, Ice navigation, Transportation, Cargo, Design, Ships, Sea ice distribution, River ice.

40-1702

Sea testing of maneuverability and speed of the SA-15 multipurpose ice breaking transport vessel. [Naturanoe ispytaniia ledovoi khodnosti i manevrenosti mnogotsелеvogo ledokol'no-transportnogo sudna tipa SA-15].

Tsol, L.G., et al. Perspektivnye tipy sudov, morekhodnye i ledovye kachestva (Advanced types of ships and their ice navigation properties) edited by I.U.I. Panin, Leningrad, Transport, 1985, p.37-45, In Russian. 4 refs.

Bogdanov, A.A., Ierusalimskii, A.V., Petrov, A.A. Ice breaking, Transportation, Ships, Icebreakers, Cargo, Tests, Propagation, Velocity measurement.

40-1703

Results of testing the performance of the Finnish VP-1 air cushion platform. [Rezultaty ekspluatatsionnykh ispytaniil platformy na vozdukhnoi podushke finskoi postroiki VP-1].

Smirnov, I.U.I., Perspektivnye tipy sudov, morekhodnye i ledovye kachestva (Advanced types of ships and their ice navigation properties) edited by I.U.I. Panin, Leningrad, Transport, 1985, p.45-51, In Russian.

Air cushion vehicles, Ships, All terrain vehicles, Amphibious vehicles.

40-1704

Analyzing the damage to transport-ship frames from ice navigation. [Analiz povrezhdaemosti korpusov transportnykh sudov arkticheskogo plavaniia].

Karavanov, S.B., Perspektivnye tipy sudov, morekhodnye i ledovye kachestva (Advanced types of ships and their ice navigation properties) edited by I.U.I. Panin, Leningrad, Transport, 1985, p.72-76, In Russian.

Ice navigation, Ice loads, Ships, Damage, Ice pressure.

40-1705

Stability of skeg-type air cushion vessels with aft sea. [Ostolchivost' SVP skegovogo tipa na poputnom volnenii].

Bogdanov, A.I., Perspektivnye tipy sudov, morekhodnye i ledovye kachestva (Advanced types of ships and their ice navigation properties) edited by I.U.I. Panin, Leningrad, Transport, 1985, p.97-108, In Russian. 10 refs.

Air cushion vehicles, Ships, Stability, Design.

40-1706

Development of continuous-operation and new special types of transport. [Razvitiie nepreryvnykh i novykh spetsial'nykh vidov transporta].

Shmal', G.I., Stroitel'stvo truboprovodov, Dec. 1985, No.12, p.5-7, In Russian.

Ducts, Pipelines, Transportation, Conveyors, Air lines (conduits), Petroleum transportation.

40-1707

Gas pipeline construction on permafrost; problems and solutions. [Sooruzhenie gazoprovodov na mnogoletnemerzlykh gruntakh: problemy i resheniia].

Ivantsov, O.M., Stroitel'stvo truboprovodov, Dec. 1985, No.12, p.9-11, In Russian.

Gas pipelines, Permafrost beneath structures, Active layer, Frozen fines, Petroleum industry, Thermal insulation.

40-1708

Environmental protection in the Far North and the safety of petroleum industry objects. [Okhrana prirody Krainego Severa i problemy nadezhnosti ob'ektov neftianoi i gazovoi promyshlennosti].

Mel'nikov, V.P., Stroitel'stvo truboprovodov, Dec. 1985, No.12, p.12-13, In Russian.

Buildings, Continuous permafrost, Underground facilities, Active layer, Soil erosion, Subarctic landscapes, Foundations, Environmental protection, Subsurface structures, Settlement (cultural).

40-1709

Protecting the environment when constructing pipelines in West Siberia and the Far North. [Okhrana okruzhaiushchego sredy pri sooruzhenii truboprovodov v raiionakh Zapadnoi Sibiri i Krainego Severa].

Borisenkov, I.A., et al. Stroitel'stvo truboprovodov, Dec. 1985, No.12, p.13-15, In Russian.

Semenov, L.P. Sporadic permafrost, Active layer, Subsurface structures, Pipelines, Environmental protection, Soil erosion, Solifluction.

40-1710

Regional scheme for environmental protection of main-pipeline sites in western Siberia. [Territorial'naia skhema okhrany prirody na trassakh magistral'nykh truboprovodov Zapadnoi Sibiri].

Amelin, A.V., et al. Stroitel'stvo truboprovodov, Dec. 1985, No.12, p.15-17, In Russian.

Shchitinskii, V.A., Romanovskaia, N.V. Permafrost beneath structures, Permafrost control, Thermal insulation, Pipelines, Site surveys, Mapping.

40-1711

Engineering-geological investigations of main pipelines. [Inzhenerno-geologicheskie issledovaniia magistral'nykh truboprovodov].

Demidiuk, L.M., et al. Stroitel'stvo truboprovodov, Dec. 1985, No.12, p.21, In Russian.

Stepanova, S.G. Geological surveys, Permafrost hydrology, Geocryology, Gas pipelines, Soil strength, Permafrost control, Permafrost beneath structures.

40-1712

Trenchless laying of cables under northern conditions. [Bestransheinaia prokladka kabelei v usloviakh Severa].

Kuz'menko, V.V., Transportnoe stroitel'stvo, Dec. 1982, No.12, p.33-35, In Russian. 4 refs.

Transmission lines, Permafrost, Construction equipment, Excavation.

40-1713

Theoretical foundations of engineering geology. Socioeconomic aspects. [Teoreticheskie osnovy inzhenernoi geologii. Sotsial'no-ekonomicheskie aspekty].

Sergeev, E.M., ed. Moscow, Nedra, 1985, 259p., In Russian with abridged English table of contents enclosed. 45 refs.

Slope processes, Soil stabilization, Engineering geology, Geocryology, Solifluction, Mudflows, Theories, Thermokarst, Cryogenic soils, Frost protection, Geological surveys, Permafrost control, Frost penetration.

40-1714

Influence of meltwater on the amount and composition of groundwater in Quaternary deposits in Finland.

Soveri, J., Helsinki. Vesientutkimuslaitoksen. Julkaisu, 1985, No.63, 92p., Refs. p.88-92.

Meltwater, Ground water, Water chemistry, Quaternary deposits, Seepage, Snowmelt, Volume, Finland.

- 40-1715**  
Ice scoring. *Photography.*  
Goodman, J. Environmental Studies Revolving Fund, 1985, 2, Calgary, Alberta, July 1985, 99.  
Howard, L.M., ed.  
Ice, Bottom topography, Bottom sediment, Ocean bottom, Seafloor, Bottom topography, Pipeline, Acoustic measurement.
- 40-1716**  
Yearbook, fiscal year 1984.  
U.S. Geological Survey, 1985, 139p.  
Glacier surveys, Geological surveys, Remote sensing, Natural resources, Aerial surveys, Acoustic measurement, Photography, Mapping.  
Administrative and budgetary aspects of the Survey, its mission and international operations, accomplishments and future activities are described. The report includes discussions of the distribution of the lower reaches of Columbia Glacier and the Antarctic leg of Operation Deep Sweep.
- 40-1717**  
Permafrost—large-scale research at Calgary and Caen.  
Burgess, M., *Geos*, Spring 1985, 14(2).  
Permafrost distribution, Permafrost, Permafrost, Active layer, Soil water migration, Permafrost, Permafrost, al freeze thaw, Underground pipeline.
- 40-1718**  
Ice formations near the banks of the St. Lawrence River. [Les formations glaciaires des rives du Saint-Laurent].  
Dionne, J.C., *Geos*, Spring 1985, 14(2), p.23-25, In French.  
Ice formation, Ice surface, Ice mechanics, Pressure ridges, Ice deformation.
- 40-1719**  
Global and local influences on the chemical composition of snowfall at Dye 3, Greenland: the record between 10 ka B.P. and 40 ka B.P.  
Finkel, R.C., et al., *Earth and planetary science letters*, May 1985, 73(2/4), p.196-206, 28 refs.  
Langway, C.C., Jr.  
Snow composition, Climatic changes, Snowfall, Oxygen isotopes, Paleoclimatology, Snow accumulation, Glaciation, Ice volume, Greenland.
- 40-1720**  
Chemical and isotopic composition of air inclusions in a Greenland ice core.  
Horibe, Y., et al., *Earth and planetary science letters*, May 1985, 73(2/4), p.207-210, 18 refs.  
Shigehara, K., Langway, C.C., Jr.  
Ice composition, Air entrainment, Oxygen isotopes, Ice cores, Chemical analysis, Bubbles, Drill core analysis, Sea water, Greenland.
- 40-1721**  
Marine science atlas of the Beaufort Sea. Sediments. [Atlas des sciences marines de la mer de Beaufort. Sédiments].  
Pelletier, B.R., ed., *Canada. Geological Survey. Miscellaneous report*, 1984, No.38, 28p., In English and French. 9 refs.  
Marine deposits, Ocean bottom, Bottom sediment, Maps, Marine geology, Suspended sediments, Clay minerals, Exploration, Natural resources, Beaufort Sea.
- 40-1722**  
Acquisition and interpretation of ice star imagery for the Prudhoe Bay area.  
Bercha, F.G. and Associates Ltd., Calgary, Alta., Mar. 1981, Var. p., 90 refs.  
Ice conditions, Remote sensing, Ice mechanics, Aerial surveys, Ice cover, Ice structure, Side looking radar, Photography, Computer applications, United States—Alaska—Prudhoe Bay.
- 40-1723**  
Cryosphere.  
Untersteiner, N., *Global climate*, edited by J.T. Houghton, Cambridge, Cambridge University Press, 1984, p.121-140, 102 refs.  
DLC QC981.G53 1984  
Snow cover, Sea ice, Ice sheets, Mountain glaciers, Permafrost.  
From the viewpoint of climate and human activity the five elements of the terrestrial cryosphere are as follows: seasonal snow cover, sea ice, ice sheets, mountain glaciers, and permafrost. The role that each plays and the significant characteristics of each are described and the interrelationships between them and other parts of the environment are examined.
- 40-1724**  
Influence of ice content on dynamic characteristics of rock deformation. [Vliianie l'distosti na dinamicheskie kharakteristiki deformirovannosti skal'nykh porod].  
Zhil'nikov, O.K., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.172, p.80-86, In Russian. 9 refs.  
Frozen rocks, Ground ice, Ice volume, Frozen rock temperature, Phase transformations, Wave propagation, Elastic waves.
- 40-1725**  
Frost weathering effect on some physical and mechanical properties of rocks. [Vliianie moroznogo vyvetrianiia na nekotorye kharakteristiki fiziko-mekhanicheskikh svoistv skal'nykh porod].  
Leshchikova, L.F., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.172, p.86-90, In Russian. 10 refs.  
Frozen rocks, Frost weathering, Freeze thaw cycles, Physical properties, Mechanical tests.
- 40-1726**  
Analytical solution of a plane stationary problem on temperature distribution in freezing ground. [Analitycheskoe reshenie ploskoi statsonarnoi zadachi o raspredelenii temperatur v zamerzaushchem grunte].  
Proskurnikov, A.B. et al., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.172, p.95-100, In Russian. 5 refs.  
Tsybin, A.M.  
Soil freezing, Frost penetration, Soil water migration, Phase transformations, Analysis (mathematics).
- 40-1727**  
Evaluation of geofiltrational properties of peat. [K otsenke geofiltratsionnykh svoistv torfa].  
Zhil'nikov, V.N., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.174, p.73-79, In Russian. 4 refs.  
Peat, Reservoirs, Embankments, Organic soils, Seepage, Dams, Swamps, Water flow, Permeability.
- 40-1728**  
Methods of conducting ice compression tests. [O metodike provedeniia ispytaniy l'da na szhatiye].  
Aleinikov, S.M., et al., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.174, p.72-77, In Russian. 12 refs.  
Gladkov, M.G., Liapin, V.E., Shatalina, I.N.  
Ice physics, Compressive properties, Tests, Laboratory techniques.
- 40-1729**  
Allowing for the passage of ice when building hydroelectric power stations. [Ob uchete propuska l'da pri vozvedenii gidroizlov].  
Sokolov, I.N., et al., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.174, p.77-81, In Russian. 18 refs.  
Koren'kov, V.A., Kovalev, S.I.  
Electric power, Hydraulic structures, Dams, Ice passing, River ice, Permafrost beneath rivers.
- 40-1730**  
Ice-bearing-ground insulation for protection of ice blocks. [Ledogruntovaia izoliatsiia dlia sokhraneniia ledianyykh blokov].  
Vasil'eva, I.M., et al., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.174, p.81-87, In Russian.  
Shatalina, I.N.  
Underground storage, Ice (construction material), Thermal insulation, Soil temperature, Ice thermal properties.
- 40-1731**  
Calculating the length of polynya, in tail waters of estuarine hydroelectric power plants, for conditions of ice-edge retreat. [Osobennosti rascheta dliny polyn'i v nizhnikh b'efakh priustevnykh GES v rezhime otstupleniya kromki l'da].  
Izgovorova, E.L., et al., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.174, p.87-95, In Russian. 7 refs.  
Tregub, G.A.  
Hydraulic structures, River ice, Ice conditions, Polynyas, Estuaries, Power supply.
- 40-1732**  
Experimental studies of creep and decay of natural ice covers. [Eksperimental'nye issledovaniia polzuchestii i razrusheniia estestvennogo ledianogo pokrova].  
Monosov, L.M., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.174, p.95-100, In Russian. 12 refs.  
Ice physics, Ice mechanics, Ice creep, Ice deterioration, Hydraulic structures, Compressive properties, Shear strength, Laboratory techniques, Ice sampling.
- 40-1733**  
Physical model for studying ice jamming on rivers and water reservoirs of hydroelectric power plants. [Fizicheskaya model' obrazovaniia ledianyykh zatorov na rekakh i vodokhranilishchakh GES].  
Karnovich, V.N., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.174, p.100-105, In Russian. 15 refs.  
River ice, Hydraulic structures, Lake ice, Ice break-up, Ice jams, Dams, Models, Ice passing.
- 40-1734**  
Design of pneumatic protection of water-intakes from frazil ice. [K metodike rascheta pnevmaticheskoi zashchity vodoropriemnikov ot vnutrivodnogo l'da].  
Abazaev, M.E., et al., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.9, p.104-107, In Russian. 4 refs.  
Vasil'chenko, M.P.  
Water intakes, Icing, Frazil ice, Countermeasures.
- 40-1735**  
Calculating strength of cutting tools of trench digging equipment used in the excavation of frozen ground with hard inclusions. [Raschet na prochnost' reztsa transheekopatel'ia pri razrabotke merzlogo grunta s tverdymi vklucheniiami].  
Basov, I.G., et al., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.9, p.116-118, In Russian. 4 refs.  
Gorodovich, V.F., Leshchikov, V.B.  
Earthwork, Frozen ground, Excavation, Construction equipment, Design.
- 40-1736**  
Some aspects of railroad design for complicated natural conditions using satellite survey data. [Nekotorye aspekty proektirovaniia zheleznyykh dorog v slozhnykh prirodnykh usloviakh s ispol'zovaniem materialov kosmicheskikh s'emyok].  
Bogdanov, A.I., *Issledovanie Zemli iz kosmosa*, Sep.-Oct. 1985, No.5, p.58-60, In Russian with English summary. 4 refs.  
Railroads, Permafrost beneath structures, Permafrost hydrology, Naleds, Design, Countermeasures, Cost analysis.
- 40-1737**  
Weather analysis and forecasting for aviation. [Analiz i prognoz pogody dlia aviatsii].  
Bogatkin, O.G., et al., *Leningrad. Gidrometeoizdat*, 1985, 231p., In Russian with abridged English table of contents enclosed. 167 refs.  
Enikeeva, V.D.  
Airports, Weather forecasting, Weather observations, Aircraft icing, Visibility, Wind factors, Atmospheric circulation, Turbulence, Ice fog, Ice storms, Snowfall.
- 40-1738**  
High frost resistance poured concrete mixes. [Vysokomorozostoiakie betony na osnove litykh betonnykh smesey].  
Ginzburg, T.G., et al., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.177, p.49-57, In Russian. 6 refs.  
Winter concreting, Concrete admixtures, Concrete strength, Concrete aggregates, Air entrainment, Frost resistance, Cements.
- 40-1739**  
Temperature regime of massive concretes poured in freezing weather by the modified "thermos" method. [Temperaturnyi rezhim massivnykh konstruktii pri betonirovanii ikh v zimnee vremia metodom modifitsirovannogo "termosa"].  
Matiushin, V.M., et al., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.177, p.57-62, In Russian. 5 refs.  
Sheinker, N.I.A.  
Winter concreting, Concrete strength, Concrete placing, Concrete hardening, Frost resistance, Permafrost beneath structures.
- 40-1740**  
Assembly for field testing of thawing soils. [Ustanovka dlia polevykh ispytaniy ottaivaiushchikh gruntov].  
Naumov, V.P., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia*, 1984, Vol.178, p.42-45, In Russian. 2 refs.  
Frozen fines, Ground thawing, Peat, Compressive properties, Test equipment.

- 40-1741**  
Method of accounting for phase transformations when calculating the stress-strain states of earth dams and their foundations in the Far North. [Metod ucheta fazovykh perekhodov v raschete napriazhenno-deformirovannogo sostoiianiia gruntovykh plotin i ikh osnovaniy v raiionakh Kralnego Severa]. Burman, G.V., Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. *Izvestiia*, 1984, Vol.178, p.74-78, In Russian. 5 refs.  
Earth dams, Foundations, Permafrost beneath structures, Hydraulic structures, Soil water migration, Phase transformations, Stress strain diagrams.
- 40-1742**  
Generalized method of calculating parameters of seasonal refrigerating units employed in frozen-type dams. [Obobshchennyi metod rascheta parametrov sezonnoislavuiushchikh okhlazhdaushchikh ustroistv (SOU) primeniamykh v plotinakh merzlogo tipa]. Buchko, N.A., et al, Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. *Izvestiia*, 1984, Vol.178, p.78-84, In Russian. 6 refs.  
Lebedkina, I.K., Turchina, V.A.  
Earth dams, Hydraulic structures, Permafrost beneath structures, Ground thawing, Artificial freezing, Thermocouples, Permafrost control.
- 40-1743**  
Forecasting thermal regime in a frozen water-intake foundation. [Prognoz termicheskogo rezhima formiruushchegosia v merzloz osnovanii vodozabornogo sooruzheniia]. Shugaeva, R.T., Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. *Izvestiia*, 1984, Vol.178, p.90-95, In Russian. 4 refs.  
Water intakes, Thermocouples, Permafrost bases, Frozen ground strength, Permafrost thermal properties, Water supply, Permafrost control, Artificial freezing.
- 40-1744**  
Forecasting thermal regime of permeable foundations of earth dams frozen by steam-and-liquid seasonal refrigerating units. [Prognoz termicheskogo rezhima fil'truushchego osnovaniia gruntovol plotiny promorazhivaemol' parozhidkostnymi okhlazhdaushchimi ustroistvami]. Shugaeva, R.T., et al, Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. *Izvestiia*, 1984, Vol.178, p.95-99, In Russian. 2 refs.  
Raspopova, R.Kh.  
Earth dams, Foundations, Permafrost beneath structures, Thermopiles, Permafrost control.
- 40-1745**  
Fluxes associated with brine motion in growing sea ice. Reeburgh, W.S., *Polar biology*, 1984, 3(1), p.29-33, 19 refs.  
Sea ice, Ice water interface, Ice structure, Brines, Cryobiology, Algae.
- 40-1746**  
Glacial geomorphology. Sharp, M., *Progress in physical geography*, June 1985, 9(2), p.291-301, Refs. p.299-301.  
Glacial geology, Geomorphology, Glacial deposits, Ice rafting, Marine deposits, Glacier flow, Glacier melting, Sedimentation, Slope orientation, Pleistocene.  
In this review of studies on glacier hydrology and glacial-marine sedimentation, the nature of the debris input on the antarctic continental shelf is discussed. It is found that ice rafting is the main source of terrigenous debris, that sedimentation rates are very low compared to the Gulf of Alaska, and that compound glacial-marine sediments containing less than 10% ice rafted debris, and a large biogenic component, are formed. On the antarctic shelf, in contrast to the Alaskan shelf, impinging geostrophic currents cause intense winnowing and produce residual glacial-marine sediments.
- 40-1747**  
Science of snow. International Symposium: Perspectives on Future Society in Snow-Prone Areas, Yamagata, Japan, Jan. 31-Feb. 2, 1984, Yamagata Prefectural Government, 1985, 71p. + 67p., In English and Japanese. Refs. passim. For selected papers see 40-1748 through 40-1752.  
Snow physics, Snow surveys, Avalanche formation, Avalanche mechanics, Snowfall, Meetings.
- 40-1748**  
Formation mechanism and behavior of cloud systems causing heavy snow-falls. Endoh, T., International Symposium: Perspectives on Future Society in Snow-Prone Areas, Yamagata, Japan, Jan. 31-Feb. 2, 1984. Collected papers. Science of snow, Yamagata Prefectural Government, 1985, p.27-34, 3 refs.  
Snowfall, Clouds (meteorology), Snow depth, Climatic factors, Atmospheric pressure, Atmospheric circulation, Wind factors, Snow accumulation.
- 40-1749**  
Physical properties of snow. Watanabe, Z., International Symposium: Perspectives on Future Society in Snow-Prone Areas, Yamagata, Japan, Jan. 31-Feb. 2, 1984. Collected papers. Science of snow, Yamagata Prefectural Government, 1985, p.35-39, 1 ref.  
Snow physics, Metamorphism (snow), Snow mechanics, Snow creep, Snow strength, Compressive properties, Classifications, Rheology.
- 40-1750**  
Avalanche research by the National Research Council of Canada. Gold, L.W., International Symposium: Perspectives on Future Society in Snow-Prone Areas, Yamagata, Japan, Jan. 31-Feb. 2, 1984. Collected papers. Science of snow, Yamagata Prefectural Government, 1985, p.41-50, 17 refs.  
Avalanche formation, Avalanche mechanics, Avalanche deposits, Impact strength, Snow water equivalent, Countermeasures, Research projects, Mountains, Canada.
- 40-1751**  
Snow avalanche dynamics and impact. Lang, T.E., International Symposium: Perspectives on Future Society in Snow-Prone Areas, Yamagata, Japan, Jan. 31-Feb. 2, 1984. Collected papers. Science of snow, Yamagata Prefectural Government, 1985, p.51-60, 29 refs.  
Avalanche mechanics, Snow fences, Impact strength, Slope orientation, Countermeasures.
- 40-1752**  
Short history of snow research in Japan, especially related to Yamagata Area. Nakamura, T., International Symposium: Perspectives on Future Society in Snow-Prone Areas, Yamagata, Japan, Jan. 31-Feb. 2, 1984. Collected papers. Science of snow, Yamagata Prefectural Government, 1985, p.65-71, 45 refs.  
Snow surveys, Ice surveys, History, Research projects, Organizations.
- 40-1753**  
Radar mapping of Arctic lake depths. Mellor, J.C., *Land and minerals surveying*, Feb. 1985, 3(2), p.85-89, 8 refs.  
Lake water, Hydrology, Geophysical surveys, Remote sensing, Mapping, Airborne radar, United States—Alaska.
- 40-1754**  
Ice-rafted evidence of long-term North Atlantic circulation. Smythe, F.W., Jr., et al, *Marine geology*, Mar. 1985, 64(1/2), p.131-141, 14 refs.  
Ruddiman, W.F., Lumsden, D.N.  
Glacial deposits, Ice rafting, Bottom sediment, Ocean currents, Sedimentation, Glaciation, Oxygen isotopes, Volcanoes, Models, Atlantic Ocean.
- 40-1755**  
New snowfighting plan tested under fire. Bush, S., *Public works*, Sep. 1985, 116(9), p.115-116.  
Snow removal, Road maintenance, Winter maintenance, Floods, Countermeasures.
- 40-1756**  
Glaciotectionic structures as useful ice-movement indicators in glacial deposits: four Canadian case studies. Hicock, S.R., et al, *Canadian journal of earth sciences*, Mar. 1985, 22(3), p.339-346, With French summary. 49 refs.  
Dreimanis, A.  
Glacial deposits, Structural analysis, Ice mechanics, Glacier beds, Sediments, Quaternary deposits, Tectonics.
- 40-1757**  
Simulating infiltration into frozen Prairie soils in streamflow models. Gray, D.M., et al, *Canadian journal of earth sciences*, Mar. 1985, 22(3), p.464-472, With French summary. 25 refs.  
Landine, P.G., Granger, R.J.  
Seepage, Frozen ground, Meltwater, Stream flow, Runoff, Water balance, Snowmelt, Snow water equivalent, Forecasting.
- 40-1758**  
Evaluation of frost heave criteria and methodology. U.S. Army Corps of Engineers. Review Group, 1984, 21p. + appends., Unpublished manuscript.  
Frost heave, Underground pipelines, Gas pipelines, Strains, Loads (forces), Ground water, Water table, Seasonal freeze thaw, Thermal insulation, Design criteria, Computer programs.
- 40-1759**  
Highway bridge deicing using passive heat sources. Griffin, R.G., Jr., Colorado. Dept. of Highways. *Report*, Dec. 1982, CDH-DTP-R-82-7, 67p., 22 refs.  
Road icing, Bridges, Ice control, Heat pipes, Heating, Geothermal thawing, Ground water, Heat sources.
- 40-1760**  
Performance of ice retardant overlay. LaForce, R.F., Colorado. Dept. of Highways. *Report*, Oct. 1982, CDH-DTP-R-82-6, 9p.  
Chemical ice prevention, Pavements, Road icing, Ice control, Bitumens, Aggregates, Design, Salting, Ice removal, Snow removal.
- 40-1761**  
Microwave determination of snowpack liquid water content. Final report. Boyne, H.S., Colorado, State University, Fort Collins, Dept. of Earth Resources, Sep. 19, 1985, 38p., ADA-161 798, 7 refs.  
Snow water content, Microwaves, Unfrozen water content, Snow cover, Snow depth, Dielectric properties, Measuring instruments, Analysis (mathematics).
- 40-1762**  
Heated abrasives on snow and ice covered roads. Final report. Swanson, H.N., Colorado. Dept. of Highways. *Report*, Aug. 1982, CDH-DTP-R-82-4, 11p. PB83-194 720.  
Road icing, Abrasion, Ice removal, Snow removal, Heating, Sanding, Ice control.
- 40-1763**  
Federal Arctic research: detailed listing of existing U.S. programs. U.S. Interagency Arctic Research Policy Committee, Washington, D.C., Sep. 1985, 136p. DOE/ER-0251.  
Research projects, Snow hydrology, Glacial hydrology, Permafrost, Oceanography, Environmental protection, Transportation, Icebreakers, Climate, Geology.
- 40-1764**  
Snowflake enigma. Taubes, G., *Discover*, Jan. 1984, 5(1), p.74-78.  
Snowflakes, Snow crystal growth, Snow physics.
- 40-1765**  
Various isotropic and anisotropic ices found in glaciers and polar ice caps and their corresponding rheologies. Lliboutry, L., et al, *Annales geophysiques*, 1985, 3(2), p.207-224, Refs. p.220-221.  
Duval, P.  
Rheology, Ice sheets, Ice models, Recrystallization, Glacier flow, Ice creep, Viscosity, Anisotropy, Ice growth, Antarctica—Byrd Station.  
There are many kinds of metamorphic ice, each of which follows a different creep law. Putting aside transient creep, for which intrinsic state variables measuring work-hardening must be introduced, these behaviors may be modeled by a power law viscosity. This law is precisely defined for a macroscopically anisotropic material; when the power is 1 or 3 and there is rotational symmetry, it is deduced from the dissipation potentials of individual grains. Values of the parameters for isotropic secondary creep and for tertiary creep with a multi-maxima fabric are given. Why the liquid water content of temperate ice affects creep is explained. Another kind of anisotropic third-power law with rotational symmetry which holds for temperate glaciers is introduced. Lastly, data from the inclinometer survey of Byrd borehole are analyzed. They show that when the shear stress is lower than about 0.27 bar, ice becomes Newtonian viscous, the viscosity being three to four orders of magnitude lower than theory of diffusional creep predicts. (Auth.)

40-1766

**Micrometre-sized volcanic glasses in polar ices and snows.**

De Angelis, M., et al. *Nature*, Sep. 5, 1985, Vol. 317, p. 52-54, 15 refs.  
Fehrenbach, L., Jéhanno, C., Maurette, M.  
**Ice cores, Paleoclimatology, Antarctica—Dome C.**  
Explosive volcanic eruptions can follow long cycles of activity, and the material that they inject into the atmosphere may affect the climate. The discovery is reported of ultrathin micrometre-sized glass shards from such eruptions, extracted from both ancient antarctic ices and recent snow samples from Greenland, in which they have been well preserved by "deep freezing". When such shards have been preselected using a high-voltage electron microscope, microanalysis of their eight major constituent elements gives new clues about the origin of major volcanic acid fallout previously detected in the cores (including important characteristics of their parent eruptions), and reveals complex volcanic ash layers that could reflect periods of worldwide enhanced volcanicity. Moreover, the very small Reynolds numbers of the micrometre-sized shards make them promising tracers of dust transport processes in the ancient atmosphere. (Auth.)

40-1767

**Ice-sheet overriding of the ice-free valleys of southern Victoria Land.**

Denton, G.H., et al. *Antarctic journal of the United States*, 1984, 19(5), 3-4, 4 refs.  
Ackert, R.P., Prentice, I.C., Potter, N., Jr.  
**Glacier flow, Ice sheet, Ice override, Antarctica—Victoria Land.**

The antarctic ice sheet exhibited two forms of late Cenozoic expansion. During the last two (and probably, three) late Quaternary glaciations, ice grounded in the Ross and Weddell embayments and on the narrow east antarctic continental shelf. However, the Transantarctic Mountains remained exposed to separate the east and west antarctic ice sheets. A surprising discovery from recent field work (Denton et al. 1984; 14E-30394, 39-19) is that several earlier expansions involved a massive ice sheet that flowed northeastward over the dry valleys and the central Transantarctic Mountains. Field work in 1983-84 in Beacon Valley, the Asgard Range, and the Olympus Range confirmed northeastward overriding flow across the topographic grain of the valleys and showed more overriding events than previously reported by Denton et al.

40-1768

**Glaciogeophysical survey of the interior Ross embayment (GSIRE): Summary of 1983-1984 field work.**

Bentley, C.R., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 49-51.  
Shabtaie, S., Blankenship, D.D., Schultz, D.G.  
**Ice sheets, Seismic prospecting, Ice temperature.**  
Glaciogeophysical field studies of the interior Ross embayment carried out at Upstream "B" camp are summarized. The measurements included radar sounding, electrical resistivity, temperature logging, gravity and magnetic studies, and seismic experiments. The geophysical grid network is shown on a sketch map of the camp.

40-1769

**Ice stream dynamics.**

Whillans, I.M., *Antarctic journal of the United States*, 1984, 19(5), p. 51-53, 8 refs.  
**Ice sheets, Glacier flow, Ice surface, Antarctica—Marie Byrd Land.**

The dynamics of the ice streams draining from Marie Byrd Land into the Ross Ice Shelf is being studied. The ice streams are named A, B, C, etc., from south to north and they are quickly moving portions of the ice sheet separated by more nearly stagnant ridges. The first site is near the center of a straight section of Ice Stream B that contains fewer crevasses than elsewhere on that ice stream. According to Rose (1979; 11F-23181, 34-2817), ice stream B is normal and "healthy," and a principle objective is to determine how the resistance to motion is manifest: by basal drag, by side drag, or by pushes or pulls in the direction of flow. The second camp was on ice stream C. Airborne radar sounding suggested that this area had heavily crevassed margins but no crevasses were visible. Rose's (1979) interpretation of this is that ice stream B has pirated the drainage of ice stream C so that ice stream C slowed and crevasses are no longer forming. The third site is on Siple Dome. At this site the program is designed to assess its suitability for deep drilling.

40-1770

**Preliminary results of Pine Island and Thwaites Glaciers study.**

Lindstrom, D., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 53-55, 9 refs.  
Tyler, D.  
**Glacier oscillation, Photogrammetry, Glacier surfaces, Antarctica—Pine Island Glacier, Antarctica—Thwaites Glacier.**

A brief description of methods used to calculate velocities on Pine Island and Thwaites Glaciers and strain rates on Pine Island Glacier and their results are presented. Velocities on Pine Island Glacier were determined by comparing the change in position of crevasses present on 1973 and 1975 Landsat imagery with respect to stationary points. Velocities on Thwaites Glacier were determined from 1972 and 1983 Landsat imagery using the assumption that all icebergs in fast ice to the west of the glacier have the same movement. Strain rates on Pine Island Glacier were computed by measuring the change in

position of sets of three to six crevasses with respect to one another that are present on aerial photography taken in 1966 and 1967.

40-1771

**Downdraw of the Pine Island Bay drainage basins of the west antarctic ice sheet.**

Lindstrom, D., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 56-58, 13 refs.  
Hughes, T.J.  
**Ice sheets, Glacier oscillation, Glacier mass balance, Ice surface, Antarctica—Pine Island Glacier, Antarctica—Thwaites Glacier.**

Hughes (1981, 12F-25634, 36-1520) proposed that ice draining through Pine Island Glacier and Thwaites Glacier into Pine Island Bay is lowering the drainage basins of these ice streams and that this represents the initial stages of a chain reaction that could ultimately lead to collapse of the west antarctic ice sheet. According to Hughes' theory, collapse would begin when these lowering ice drainage basins enlarge and neighboring ice drainage basins, which supply ice streams across the west antarctic ice divide, shrink. In particular, Hughes believed that the Pine Island Glacier ice-drainage basin enlargement (and the consequent Rutford Ice Stream ice drainage basin shrinkage) is in a late stage and that the Thwaites Glacier ice drainage basin enlargement is in an early stage. Mass balance data are presented to test this idea. The results seem to suggest that the surface of Pine Island Glacier drainage basin has been lowering. Thwaites Glacier would seem to be in an early stage of surging before the effects of downdraw become apparent.

40-1772

**Hot-water drilling on the Siple Coast and ice core drilling at Siple and South Pole Stations.**

Kuivinen, K.C., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 58-59, 6 refs.  
Koci, B.R.

**Ice coring drills, Drilling, Antarctica—Siple Station, Antarctica—Amundsen-Scott Station.**

The Polar Ice Coring Office (PICO) used a new hot-water drill and a new 200-meter winch and electromechanical coring drill at three antarctic locations during the 1983-1984 field season. Hot-water drilling of shot holes for the University of Wisconsin seismic program was conducted at Upstream B on the Siple Coast. PICO collaborated with the Physics Institute, University of Bern, Switzerland, in two drilling and core processing projects: a 201-m ice core was collected at Siple Station for analysis by the University of Bern group and, at South Pole Station, a core was drilled from 230 to 353.5 m in a hole left open after the 1982-1983 season. The operation and performance of the drills are described, as well as modifications made to improve core quality.

40-1773

**Core processing and first analysis of ice cores from Siple and South Pole Stations.**

Stauffer, B., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 59-60, 7 refs.  
Schwander, J.

**Ice cores, Drill core analysis, Ice composition, Antarctica—Siple Station, Antarctica—Amundsen-Scott Station.**

Analysis of ice cores from the Antarctic allows the study of the history of climatic parameters such as temperature, annual accumulation, and atmospheric composition. The main goal of this laboratory analysis of these ice cores is to investigate the preindustrial atmospheric carbon dioxide concentration and its natural variations and to measure the carbon-13/carbon-12 ratio in the preindustrial carbon dioxide and in other atmospheric trace gases such as methane. Preliminary analyses are reported for two core-drilling and core-processing projects conducted in collaboration with the Polar Ice Coring Office during the 1983-84 field season, one at Siple Station where there is a high snow accumulation (50 cm, water equivalent) and one at South Pole Station where there is a low accumulation (7 cm, water equivalent). The study included measurements of electrical conductivity, density and porosity, visual stratigraphy, and preparation of thin sections for crystal-size analysis.

40-1774

**French glaciological activities at the South Pole.**

Gillet, F., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 61, 1 ref.  
Legrand, M.

**Drilling, Ice coring drills, Drill core analysis, Antarctica—South Pole.**

Drilling operations at the South Pole using a thermal probe called "climatic" in combination with an electro-mechanical drill are described. Although the drilling operations were not successful, it is believed that with minor improvements the probe will become an efficient piece of deep-drilling equipment. Ice core studies included visual stratigraphy, density measurement, sampling for isotopes, collection of thin sections for crystal-size studies, and electrical conductivity measurements.

40-1775

**Oxygen isotope studies at the South Pole.**

Groote, P.M., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 62-63, 15 refs.  
Stuiver, M.

**Snow composition, Snow stratigraphy, Antarctica—South Pole.**

Snow in three pits near Amundsen-Scott South Pole station has an average delta 18-O value of -51 to -52‰. The amplitude of the seasonal delta 18-O cycle as recorded in the firm is 12 to 13‰. The three profiles do not show a close correlation due

to (partially) missing summer snow layers in this low accumulation area. The two, about 200 m long South Pole cores will therefore show significant correlation only on a time scale of decades or longer.

40-1776

**Vostok tephra—an important englacial stratigraphic marker.**

Kyle, P.R., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 64-65, 12 refs.  
Palais, J., Thomas, E.

**Ice cores, Ice composition, Volcanic ash, Antarctica—Vostok Station.**

Tephra (volcanic ash) layers, if they are widespread, have the potential to provide important stratigraphic markers in ice cores. 0.05 m thick tephra layer was discovered in the bottom of a 101 m long ice core drilled at Vostok Station in Dec. 1979. An age of 3,300 yr was assigned to the tephra which is andesitic and characterized by high iron concentrations. Analyses are given. All available data at this time strongly suggest that the South Sandwich Islands—and in particular Candlemas Island—is the source of the Vostok tephra.

40-1777

**Thermomechanical behavior of large ice masses.**

Yuen, D.A., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 65, 2 refs.  
Saari, M.R., Schubert, G.

**Ice sheets, Ice models.**

Work on this project has been concerned with developing 1) a faster way of obtaining one-dimensional steady-state velocity and temperature profiles of large ice masses, 2) a numerical code that can be used to monitor the time history of shear heating instabilities of ice flows, and 3) an essentially analytical model to account for the role played by the thinning of the ice sheet in glacial surges. A new class of solutions has been found in association with large accumulation rates. The character of the new solutions is briefly considered.

40-1778

**Dating antarctic ice by the carbon-14 and uranium-238 series methods.**

Fireman, E.L., *Antarctic journal of the United States*, 1984, 19(5), p. 66-67, 2 refs.

**Ice dating, Ice sheets, Ice composition.**

During the past year, work focussed on dating antarctic ice by the carbon-14 and uranium-238 series methods. Measurements were made on clean and dirty ice samples from the Cul de Sac site of Allan Hills and the Byrd ice core. The measurements included radium-226 from radon-222, uranium-238, uranium-234, and thorium-230. The techniques used are described and preliminary results are given.

40-1779

**Ross Sea oceanography, 1984.**

Jacobs, S.S., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 72-73, 17 refs.

Smethie, W.M., Jr., Pillsbury, R.D., MacAyeal, D.R.  
**Oceanography, Heat flux, Ice melting, Subglacial observations, Antarctica—Ross Sea.**

The Ross Sea heat flux experiment is primarily concerned with the role of glacial ice in ocean circulation on the antarctic continental shelf. Specifically, an attempt is being made to monitor the transport of heat and salt from the ocean into the cavity beneath the Ross Ice Shelf. Various physical and geochemical measurements are being made to estimate basal melting rates, residence time of water on the continental shelf and the exchange of CO<sub>2</sub> between the high-latitude atmosphere and oceans. Observations of oceanographic stations occupied in the Ross Sea from the USCGC *Polar Sea*, in Jan.-Feb. 1984, are described.

40-1780

**Diatoms from the McMurdo Ice Shelf, Antarctica.**

Kellogg, D.E., et al. *Antarctic journal of the United States*, 1984, 19(5), p. 76-77, 8 refs.

Kellogg, T.B.

**Algae, Cryobiology, Ice surface, Ecology, Ice shelves, Antarctica—McMurdo Ice Shelf.**

Sediment samples collected from the surface of the McMurdo Ice Shelf (southwestern Ross Sea) yielded low abundances of marine diatoms, probably because of the unavailability of needed light and nutrients for diatoms beneath the shelf. Non-marine diatoms, however, were abundant and diverse. This is consistent with the presence of numerous ponds on the shelf surface. The marine and non-marine species present in the samples are identified.

40-1781

**Interaction between volcanism and glaciation. [Vzaimodelstvie vulkanizma s oledeneniem].**

Kotliakov, V.M., ed. *Akademiya nauk SSSR. Mezhdunarodstvennyy geofizicheskii komitet. Glaciologicheskie issledovaniya*, 1985, No. 27, 140p. In Russian. For selected papers see 40-1782 through 40-1788. Refs. passim.

Vinogradov, V.N., ed. Glazovskii, A.F., ed.  
**Volcanoes, Volcanic ash, Photogrammetry, Glacial hydrology, Seismology, Glacier ice, Slope processes, Mudflows, Glaciation, Ice volume, Mountain glaciers, Snow cover thickness, Pollution, Thermal regime, Hydrothermal processes.**

- 40-1782**  
Volcanism and glaciation. (Vulkanizm i oledeniye). Vinogradov, V.N., *Akademiia nauk SSSR. Mezhdovedomstvennyi geofizicheskii komitet. Glatsiologicheskie issledovaniia*, 1985, No.27, p.7-25, In Russian with English summary. 41 refs.  
Volcanoes, Glacier oscillation, Glaciation, Slope processes, Mudflows, Volcanic ash, Snow composition, Hydrothermal processes, Pollution, Heat transfer, Mass transfer, USSR—Kamchatka Peninsula.
- 40-1783**  
Glacier-volcano interactions and their manifestation in the regime and morphology of the glaciers. (Vzaimodelstvie oledeniia i vulkanizma i ego proiavlenie v rezhime i morfologii lednikov). Glazovskii, A.F., et al., *Akademiia nauk SSSR. Mezhdovedomstvennyi geofizicheskii komitet. Glatsiologicheskie issledovaniia*, 1985, No.27, p.26-35, In Russian with English summary. 35 refs.  
Grosval'd, M.G.  
Glacial hydrology, Glacier alimentation, Glacier ablation, Volcanoes, Topographic effects, Ice caves, Glaciation, Glacier beds, Snow cover distribution, Pollution.
- 40-1784**  
Regimes of glaciers in the volcanic regions of the Kamchatka Peninsula. (Rezhim lednikov vulkanicheskikh raionov Kamchatki). Vinogradov, V.N., et al., *Akademiia nauk SSSR. Mezhdovedomstvennyi geofizicheskii komitet. Glatsiologicheskie issledovaniia*, 1985, No.27, p.36-50, In Russian with English summary. 8 refs.  
Murav'ev, I.A.D.  
Glacier ice, Ice volume, Glacier alimentation, Glacier ablation, Glacier mass balance, Charts.
- 40-1785**  
Interglacial eruptions. (Vnutrilednikovye izverzheniia). Tsiurupa, A.I., *Akademiia nauk SSSR. Mezhdovedomstvennyi geofizicheskii komitet. Glatsiologicheskie issledovaniia*, 1985, No.27, p.67-76, In Russian with English summary. 27 refs.  
Mudflows, Volcanoes, Glaciation, Glacier ice, Ice caves, Slope processes, Glacial hydrology.
- 40-1786**  
Glacial deposits in areas of active volcanism in the Kamchatka Peninsula. (Lednikovye obrazovaniia raionov aktivnogo vulkanizma (na primere Kamchatki)). Kraevaia, T.S., et al., *Akademiia nauk SSSR. Mezhdovedomstvennyi geofizicheskii komitet. Glatsiologicheskie issledovaniia*, 1985, No.27, p.77-89, In Russian with English summary. 5 refs.  
Kuralenko, N.P.  
Dust, Mountain glaciers, Volcanoes, Snow composition, Glacier ice, Glacier alimentation, Glacial deposits, Pollution, Volcanic ash, Pyroclastic rocks.
- 40-1787**  
Microseismic investigations of glaciers. (Mikrosesimicheskie issledovaniia lednikov). Farberov, A.I., *Akademiia nauk SSSR. Mezhdovedomstvennyi geofizicheskii komitet. Glatsiologicheskie issledovaniia*, 1985, No.27, p.90-107, In Russian with English summary. 39 refs.  
Mountain glaciers, Volcanoes, Glacier ice, Microseisms, Measuring instruments, Hydrothermal processes, Subglacial eruptions.
- 40-1788**  
Glaciological and volcanological studies on Mt. Wrangell volcano, Alaska. (Glatsiologicheskie issledovaniia na vulkane Vrangeliia, Alaskai). Benson, K., et al., *Akademiia nauk SSSR. Mezhdovedomstvennyi geofizicheskii komitet. Glatsiologicheskie issledovaniia*, 1985, No.27, p.114-133, In Russian with English summary. 17 refs.  
Mountain glaciers, Volcanoes, Glacier ice, Ice volume, Photogrammetry, Charts, Ice temperature, Heat transfer, Heat flux, Ice melting.
- 40-1789**  
Construction of NKK ice model basin. Sudo, M., et al., *Nippon Kokan technical report*, Aug. 1984, No.41, p.135-144.  
Ice models, Ice strength, Tanks (containers), Ice navigation, Ice breaking, Icebreakers, Air conditioning, Tests.
- 40-1790**  
Vegetation and environmental gradients of the Prudhoe Bay region, Alaska. Walker, D.A., *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1985, CR 85-14, 239p., ADA-162 022, Refs. p.122-135.  
Tundra, Vegetation, Temperature gradients, Plants (botany), Coastal topographic features, Ice wedges, Snow depth, Temperature effects, Loess, Hummocks, Soil water, United States—Alaska.  
The Prudhoe Bay region is a particularly interesting area of tundra because of its well-defined and steep environmental gradients, the combination of which has not been described elsewhere in the Arctic. It is a region of wet coastal tundra that has a unique substrate pH gradient, due in part to its coastal location. The prevailing northeast winds distribute loess from the Sagavanirktok River over most of the region. Areas downwind from the river have alkaline tundra with a gradient of declining soil pH values away from the river; the northwest portion of the region is not downwind from the river and consequently has acidic tundra. The coastal temperature gradient is among the steepest in the Arctic. Three of Young's (1971) four floristic zones, which are based on the amount of total summer warmth, are present within the region. The effects of the temperature gradient can be seen in the increase of the total number of plants in the flora and the increased plant productivity, particularly of shrubs, as one moves inland. The predominantly wet landscape also creates steep vegetation gradients within elevation changes of a few centimeters. Small hummocks and higher microsites associated with ice wedge polygon relief may be elevated only 10-25 cm above the level of saturated soils but can support rich mesic tundra plant communities.
- 40-1791**  
Meter for the conductivity and the dielectric constant of ice. (Medidor de conductividad y constante dieléctrica del hielo). Caranti, J.M., et al., *Revista telegráfica electrónica*, Sep. 1984, 73(855), p.1264-1267, In Spanish. 3 refs.  
Ré, M.A.  
Ice electrical properties, Electrical resistivity, Dielectric properties, Measuring instruments.
- 40-1792**  
DTA studies of soil and gel structures in aqueous dispersions of pyrogenic silicas. Ehrburger, F., et al., *Colloids and surfaces*, Apr. 22, 1985, 14(1), p.31-45, 10 refs.  
Guérin, V., Lahaye, J.  
Freeze thaw cycles, Solutions, Dispersions, Thermal properties, Ice melting, Nuclear magnetic resonance, Colloids, Temperature effects, Aggregates.
- 40-1793**  
Fundamentals of engineering geology (geological basis). (Teoreticheskie osnovy inzhenernoi geologii (geologicheskie osnovy)). Sergeev, E.M., ed., Moscow, Nedra, 1985, 332p., In Russian with abridged English table of contents enclosed. 50 refs.  
Glaciation, Engineering geology, Permafrost hydrology, Permafrost distribution, Glacial lakes, Geological maps, Periglacial processes, Theories, Ground ice, Hydrothermal processes, Climatic factors, Tectonics.
- 40-1794**  
Remote sensing of ice and snow. Hall, D.K., et al., London, Chapman and Hall Ltd., 1985, 189p., Refs. passim.  
Martinec, J.  
Ice surveys, Snow surveys, Permafrost, Remote sensing, Water balance, Runoff, Mapping, Microwaves, Seasonal variations.  
In this book, the utility of remote sensing for identifying, mapping and analyzing surface and subsurface properties of worldwide ice and snow features is described. Emphasis is placed on the use of remote sensing for developing an improved understanding of the physical properties of ice and snow and understanding the interrelationships of cryospheric processes with atmospheric, hydrospheric and oceanic processes. Current and potential applications of remotely sensed data are also stressed. Approximately one dozen scattered pages are relevant to Antarctica.
- 40-1795**  
Islands in search of oil—land platforms in the Beaufort Sea. Nurski, J., *Science dimension*, 1985, 17(3), p.11-21.  
Artificial islands, Ice loads, Offshore drilling, Countermeasures, Offshore structures, Ice pressure, Caissons, Beaufort Sea.
- 40-1796**  
Canmar's berm-supported SSDC drilling advances arctic technology. Hewitt, K.J., et al., *Oil and gas journal*, July 1, 1985, 83(26), p.39-43, 2 refs.  
Berzins, W.E., Fitzpatrick, J.P., Hogeboom, H.G.  
Offshore drilling, Offshore structures, Caissons, Design, Canada.
- 40-1797**  
New elastomer developed specifically for arctic well-heads. Copley, K., *Oil and gas journal*, July 1, 1985, 83(26), p.60-61.  
Drills, Cold weather operation, Wells, Equipment.
- 40-1798**  
Ice algae—an intriguing arctic phenomenon. Waite, A., *Canadian geographic*, Oct.-Nov. 1985, 105(5), p.59-61.  
Algae, Ice bottom surface, Marine biology, Cryobiology, Sea ice, Plankton, Porosity, Northwest Passage.
- 40-1799**  
Ice-lubricated gravity spreading of the Olympus Mons aureole deposits. Tanaka, K.L., *Icarus*, May 1985, 62(2), p.191-206, 34 refs.  
Extraterrestrial ice, Mars (planet), Geomorphology, Shear strength, Ground ice, Volcanoes, Permafrost, Models.
- 40-1800**  
Polar frost formation on Ganymede. Johnson, R.E., *Icarus*, May 1985, 62(2), p.344-347, 25 refs.  
Extraterrestrial ice, Frost, Ice formation, Models, Ions, Ice temperature.
- 40-1801**  
Colorado will tap geothermal water to heat bridge decks. *Better roads*, Aug. 1984, 54(8), p.14-15.  
Bridges, Road icing, Heat pipes, Geothermal prospecting, Heating, Heat transfer, Countermeasures.
- 40-1802**  
Tips on getting better, less expensive sand for winter operations. Calabro, M.F., *Airport services management*, Jan. 1985, 25(1), p.39-41.  
Snow removal, Ice removal, Aircraft landing areas, Sanding, Winter maintenance, Road maintenance, Damage, Runways.
- 40-1803**  
Natural production, storage, and utilization of ice in deep ponds for summer air conditioning. Bahadori, M.N., *Solar energy*, 1985, 34(2), p.143-149, 15 refs.  
Ice refrigeration, Cold storage, Ponds, Air conditioning, Ice water interface, Cost analysis, Ice volume, Buildings.
- 40-1804**  
Snow control program stresses preparedness. Amundson, W.W., et al., *Public works*, Aug. 1985, 116(8), p.60-62.  
Arnold, J.L.  
Snow removal, Ice removal, Streets, Ice control, Abrasion, Road maintenance, Winter maintenance, Salting, Sanding, Equipment.
- 40-1805**  
Wetted salt: more muscle for snow and ice control. Shultz, S., *Public works*, Aug. 1985, 116(8), p.68.  
Salting, Ice removal, Road icing, Snow removal, Ice melting, Snow melting, Moisture.
- 40-1806**  
Snow loading: snowblower versus front end loader. Meitin, L., *Public works*, Aug. 1985, 116(8), p.69.  
Snow removal, Equipment, Cost analysis.
- 40-1807**  
Denver's snow control plan blends judgment and technology. Mrozek, J.S., *Public works*, Aug. 1985, 116(8), p.78-80.  
Snow removal, Warning systems, Forecasting, Flooding.
- 40-1808**  
New radio system improves county snow control program. Nation, C., *Public works*, Aug. 1985, 116(8), p.82-84.  
Snow removal, Radio communication, Equipment.
- 40-1809**  
Built-in snow and ice control for roadways. Kelley, J.F., *Public works*, Aug. 1985, 116(8), p.89-90.  
Snow removal, Ice removal, Ice control, Road icing, Road maintenance, Winter maintenance, Chemical ice prevention.
- 40-1810**  
Investigating the ice-water interface: two light-scattering experiments. Brown, R.A., Davis, C.A., University of California, 1984, 77p., University Microfilms order No.85-07291, Ph.D. thesis. 47 refs. For abstract see Dissertation abstracts international, 1985, 46(2-B) p.561.  
Ice water interface, Ice optics, Light scattering.

40-1811

Freezer model using a population balance approach for steady-state, direct-contact, secondary refrigerant, freeze desalination.

Byrd, L.W., Raleigh, N.C., North Carolina State University, Department of Mechanical and Aerospace Engineering, 1984, 115p., University microfilms order No.85-07355, Ph.D. thesis. 29 refs. For abstract see Dissertation abstracts international, 1985, 46(2-B) p.614.

Desalting, Cryogenics, Artificial freezing.

40-1812

Response of cloud microphysical instruments to aircraft icing conditions.

Glass, M., et al, U.S. Air Force. *Geophysics Laboratory. Meteorology Division. Technical report*, July 6, 1981, AFGL-TR-0192, Environmental Research Paper No.747, 57p., ADA-112 317, 21 refs. Grantham, D.D.

Aircraft icing, Cloud physics, Meteorological instruments.

40-1813

1985 Ice island refraction surveys. Phase I report. Asudeh, I., et al, Canada. *Dept. of Energy, Mines and Resources. Earth Physics Branch. Open file*, [1985], No.85-23, Geological Survey of Canada. Open file, No.1196, 25p. + append., 4 refs.

Ice islands, Seismic refraction, Ice spectroscopy, Water waves, Statistical analysis.

40-1814

Assessment of marine radars for the detection of ice and icebergs.

Ryan, J.P., et al, *Environmental Studies Revolving Funds. Report*, Aug. 1985, No.8, 127p., With French summary. 23 refs.

Harvey, M., Kent, A.

Ice detection, Icebergs, Radar photography, Sea ice distribution, Meteorological factors, Backscattering, Surface properties, Platforms.

40-1815

Methods for the fracturing of icebergs.

Gammon, P.H., et al, *Environmental Studies Revolving Funds. Report*, July 1985, No.11, 91p., With French summary. Refs. p.88-91.

Lewis, J.C.

Icebergs, Ice cutting, Fracturing, Electric heating, Cables (ropes), Engineering, Hydraulic jets.

40-1816

Ice force results from the modified Yamachiche Bend lightpier, winter 1983-84.

Frederking, R.M.W., et al, *National Research Council, Canada. Division of Building Research. Paper*, [1985], No.1316, p.319-331, Reprinted from proceedings of the Canadian Coastal Conference, St. John's, Newfoundland, Aug. 13-16, 1985. With French summary. 10 refs.

Sayed, M., Hodgson, T., Berthelet, W.

Ice loads, Offshore structures, Ice pressure, Piers, Loads (forces), Ice solid interface.

40-1817

Québec North Shore Moraine System: a major feature of late Wisconsin deglaciation.

Dubois, J.M.M., et al, *Geological Society of America Special paper*, 1985, No.197, p.125-133, 43 refs.

Dionne, J.C.

Moraines, Glacial deposits, Paleoclimatology, Hummocks, Glaciation, Distribution, Canada—Quebec.

40-1818

Morphologic diversity of microflora in the Angara River and the Bratsk reservoir. (O morfoloicheskom raznoobrazii mikroflory Angary i Bratskogo vodokhranilishcha).

Dutova, N.V., Mikroorganizmy v ekosistemakh ozer i vodokhranilishch (Microorganisms in ecosystems of lakes and reservoirs) edited by V.V. Driukker, Novosibirsk, Nauka, 1985, p.101-105, In Russian. 8 refs.

Microbiology, Permafrost beneath rivers, Bacteria, Permafrost beneath lakes, Water temperature, Solar radiation.

40-1819

Preliminary cementation of water-bearing rocks for construction of the Severo-Muyskiy tunnel of BAM.

(Predvaritel'naya tsementatsiya vodonosnykh porod pri prokhodke stvolov Severo-Muyskogo tunnela BAM).

Florov, I.N., et al, *Shakhtnoe stroitel'stvo*, June 1985, No.6, p.19-22, In Russian.

Solodovnikov, A.V., Logachev, N.T.

Artificial freezing, Tunneling (excavation), Grouting, Baykal Amur railroad, Walls, Cements, Cement admixtures.

40-1820

Designing railroads for the West Siberian Oil-and-Gas Combine. (Proektirovanie zheleznnykh dorog Zapadno-Sibirskogo neftegazovogo kompleksa).

Belishkin, L.N., et al, *Transportnoe stroitel'stvo*, Nov. 1985, No.11, p.6-7, In Russian.

Khralov, A.I.A.

Petroleum transportation, Railroads, Permafrost beneath structures, Industrial buildings, Foundations, Thermal insulation, Heat loss, Embankments, Naleds.

40-1821

Application of radioactive isotope methods in surveys. (Primenenie radioizotopnykh metodov pri izyskaniakh).

Tishkin, V.A., et al, *Transportnoe stroitel'stvo*, Nov. 1985, No.11, p.7-8, In Russian.

Grebeshchev, V.M., Mamzelev, A.P.

Well logging, Radioactive isotopes, Frozen rocks, Engineering geology, Surveys.

40-1822

Roadbed design for clay soils. (Proektirovanie zemliannogo polotna v glinistykh gruntakh).

Kudriavtsev, A.P., *Transportnoe stroitel'stvo*, Nov. 1985, No.11, p.8-9, In Russian.

Roadbeds, Thixotropy, Clays, Foundations, Frozen fines, Freeze thaw cycles, Wettability, Dynamic loads.

40-1823

Modern methods of design. (Progressivnye reshenia v proektakh).

Satsyurov, I.F., *Transportnoe stroitel'stvo*, Nov. 1985, No.11, p.10-11, In Russian.

Railroads, Electric power, Buildings, Foundations, Permafrost beneath structures, Modular construction.

40-1824

Instruments for measuring frozen ground temperature in wells. (Izmeriteli temperatury merylykh gruntov v skvazhinakh).

Iur'ev, N.A., et al, *Transportnoe stroitel'stvo*, Nov. 1985, No.11, p.26-28, In Russian.

Grebeshchev, V.M.

Wells, Frozen rock temperature, Boreholes, Buildings, Measuring instruments, Foundations.

40-1825

Water regime in conifer stands growing on old dried peat bogs. (Vodnyi rezhim v khvoynykh drevostoiakh na starosushennykh torfianikakh).

Pakhuchit, V.V., Leningrad, Nauka, 1985, 72p., In Russian with English table of contents enclosed. Refs. p.66-72.

Peat, Forest soils, Organic soils, Cryogenic soils, Drainage, Soil water migration, Swamps.

40-1826

Mechanization of earthwork for complicated conditions; review. (Mekhanizatsiya zemliannykh rabot v slozhnykh usloviyakh).

Mentukov, V.P., et al, *Neftianaya promyshlennost'. Seriya transport i khraneniye nefi i nefteproduktov. Obzornaya informatsiya*, 1985, No.5, 53p., In Russian. 12 refs.

Gromov, N.I.

Earthwork, Embankments, Earth dams, Pipelines, Excavation, Frozen ground, Drilling, Blasting, Trenching.

40-1827

Blasting technique of pipe welding; review. (Svarka trub vzryvom).

Gumerov, A.G., et al, *Neftianaya promyshlennost'. Seriya transport i khraneniye nefi i nefteproduktov. Obzornaya informatsiya*, 1985, No.7, 40p., In Russian with English table of contents enclosed. 10 refs.

Molodtsov, G.I., Mal'tsev, A.A., Kurmaeva, N.M.

Pipelines, Welding, Hot oil lines, Petroleum industry.

40-1828

Engineering geology. (Inzhenernaya geologiya).

Reuter, F., et al, Moscow, Nedra, 1983, 528p. (Pertinent p.332-528), Russian translation of *Ingenieur-geologie*, Leipzig, 1980. With abridged English table of contents enclosed. 130 refs.

Klengel, K., Pašek, J.

Foundations, Slope processes, Hydraulic structures, Roads, Tunnels, Piles, Frost heave, Frost action, Dams, Human factors, Freeze thaw cycles, Geological surveys, Measuring instruments, Models, Airborne equipment, Photointerpretation, Mapping.

40-1829

Bar graphs of climatological data for Alaskan stations: temperature, snowfall, and thawing and freezing degree days for 1949-1982. Interim report.

Hoffman, P.A., et al, Fairbanks, University of Alaska, Geophysical Institute, Jan. 1986, c80p.

Osterkamp, T.E.

Snowfall, Freeze thaw cycles, Meteorological data, Degree days, Synoptic meteorology, Weather stations, Design criteria, Computer applications, Air temperature, United States—Alaska.

40-1830

Shoreline monitoring programs for oil spills-of-opportunity.

Harper, J.R., et al, *Environmental Studies Revolving Funds. Report*, Sep. 1985, No.12, 50p., With French summary. Refs. p.48-50.

Owens, E.H.

Oil spills, Shores, Countermeasures, Environmental protection, Pollution, Aerial surveys.

40-1831

Underwater iceberg geometry.

Buckley, T., et al, *Environmental Studies Revolving Funds. Report*, Sep. 1985, No.14, 113p. + 9 append., With French summary. 88 refs.

Icebergs, Underwater ice, Ice acoustics, Ice optics, Measurement, Acoustic measurement, Optical properties, Design, Mapping.

40-1832

Technical bulletin, Dec. 1985, Vol.11, No.2.

National Data Buoy Center, NSTL, MS, U.S. National Oceanic and Atmospheric Administration, 1985, 8p. Drift stations, Ice formation, Weather stations, Meteorological data, Oceanography.

40-1833

Means for controlling slipperiness in winter. (Środek do zwalczania śliskości zimowej).

Bielecka, K., et al, *Poland. Urząd patentowy. Patent*, Feb. 15, 1979, 2p. POP-100 679.

Skid resistance, Winter maintenance, Chemical ice prevention, Motor vehicles, Corrosion, Countermeasures.

40-1834

Effect of frost action on buried water pipes. (Telens innflytelse på nedgravede rør).

Gregersen, O., Oslo. *Norges geotekniske institutt. Publikasjon*, 1984, No.153, p.1-5, In Norwegian with English summary. 5 refs.

Underground pipelines, Frost action, Water pipes, Soil pressure, Stresses, Soil temperature, Pipe laying, Temperature effects.

40-1835

Building petroleum industry objects on weak water-saturated ground. Review. (Stroitel'stvo neftepromyslovykh sooruzhenii na slabnykh vodonasyshchennykh gruntakh).

Svetitskiy, E.V., et al, *Neftianaya promyshlennost'. Seriya neftepromyslovoe stroitel'stvo. Obzornaya informatsiya*, 1985, No.6, 69p., In Russian.

Brednev, A.V.

Embankments, Cryogenic soils, Paludification, Soil stabilization, Drains, Buildings, Soil compaction, Foundations, Piles, Petroleum industry.

40-1836

Plant communities of the Ural Mountains and their man-induced degradation. (Rastitel'nye soobshchestva Urala i ikh antropogennaya degradatsiya).

Gorchakovskii, P.L., ed, Sverdlovsk, 1984, 136p., In Russian. For selected papers see 40-1837 through 40-1840. Refs. passim.

Alpine tundra, Human factors, Vegetation patterns, Mosses, Lichens, Plant ecology, Alpine landscapes, Slope orientation, Ecosystems, Degradation.

40-1837

Lichens of the North Ural high-mountain area. (Lishalniki vysokogor'nykh Severnogo Urala).

Magomedova, M.A., *Rastitel'nye soobshchestva Urala i ikh antropogennaya degradatsiya* (Plant communities of Ural Mountains and their man-induced degradation) edited by P.L. Gorchakovskii, Sverdlovsk, 1984, p.91-101, In Russian. 13 refs.

Alpine tundra, Alpine landscapes, Lichens, Vegetation patterns, Plant ecology, Slope orientation, Ecosystems.

40-1838

Alpine tundras of northern Ural Mountains and their tolerance of human activities. [Antropotolerantnost' gornotundrovyykh fitotsenozov Severnogo Urala], Andreiashkina, N.I., Rastitel'nye soobshchestva Urala i ikh antropogennaya degradatsiya (Plant communities of Ural Mountains and their man-induced degradation) edited by P.L. Gorchakovskii, Sverdlovsk, 1984, p.110-122, In Russian. 20 refs.

Alpine tundra, Human factors, Vegetation patterns, Plant ecology, Ecosystems, Lichens, Mosses.

40-1839

Changes in the development rhythms of the shrub-moss-lichen Alpine tundra due to trampling. [Izmeneniya v ritme razvitiya kustarnichkovo-mokhovolishainikovoi gornoj tundry pod vliyaniem vytyvaniya], Andreiashkina, N.I., Rastitel'nye soobshchestva Urala i ikh antropogennaya degradatsiya (Plant communities of Ural Mountains and their man-induced degradation) edited by P.L. Gorchakovskii, Sverdlovsk, 1984, p.123-127, In Russian. 4 refs.

Alpine tundra, Plant ecology, Mosses, Lichens, Plant physiology, Human factors.

40-1840

Phenologic rhythms of Alpine meadows of the Polar Ural mountains, growing in snow-line areas. [Fenologicheskaia ritmika okolosnezhnykh vysokogornyykh lugov Poliar'nogo Urala], Igoshcheva, N.I., Rastitel'nye soobshchestva Urala i ikh antropogennaya degradatsiya (Plant communities of Ural Mountains and their man-induced degradation) edited by P.L. Gorchakovskii, Sverdlovsk, 1984, p.128-135, In Russian. 7 refs.

Snow line, Meadow soils, Plant ecology, Cryogenic soils, Alpine landscapes, Plant physiology, Ecosystems, Polar regions.

40-1841

Runoff-forming role of nales. [Stokoformiruyushchaya rol' naledet], Sokolov, B.L., *Vodnye resursy*, Jan.-Feb. 1986, No.1, p.3-14, In Russian. 14 refs.

Naleds, River basins, Permafrost beneath rivers, Water reserves, Icebound rivers, Permafrost hydrology, Ice cover thickness, Water balance, Analysis (mathematics).

40-1842

On the discrimination of water and ice clouds in multispectral AVHRR-data. Kottenberg, H., et al., *Annalen der Meteorologie*, 1982, No.18, Symposium über Strahlungstransportprobleme und Satellitenmessungen in der Meteorologie und der Ozeanographie, Köln, March 1982, p.145-147, 4 refs.

Raschke, E.  
DLC QC851.A67 Nr.18

Remote sensing, Spacecraft, Clouds (meteorology), Sea ice.

40-1843

Acoustic and pressuremeter methods for investigation of the rheological properties of ice. Fish, A.M., MP 1988, Hanover, NH, USA CRREL, 1978, 196p., Ph.D. thesis. Refs. p.181-196.

Ice creep, Rheology, Ice strength, Acoustic measurement, Cracking (fracturing), Compressive properties, Pressure, Ice crystal structure, Ice mechanics, Time factor, Measuring instruments, Settlement (structural).

Theoretical and experiment studies of time-dependent deformation and failure of columnar-grained ice are presented. Laboratory uniaxial compression tests at constant and steadily increasing stresses were accompanied by simultaneous recording of acoustic emissions. Strength criteria and constitutive equations were established, describing grain disintegration, microcrack initiation and acoustic emission dynamics during creep, and their relationship to the rheological properties of ice. The rheological properties of ice were studied under laboratory and field conditions using a pressuremeter, leading to the development of an *in situ* method for determining the mechanical properties of ice taking into account the time factor. The results of the studies were applied in analyses of settlements of foundations on high-ice-content soils and ground ice. Based on the comparison of experimental data with calculated settlements, it is shown that the characteristics of ice used in the analysis can be determined either from laboratory tests or *in situ*, by means of a pressuremeter.

40-1844

Climate and paleoclimate of lakes, rivers and glaciers. Symposium on Climate and Paleoclimate of Lakes, Rivers and Glaciers, Igls, Austria, June 4-7, 1984. *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, 425p., With German summaries. Refs. passim. For selected papers see 40-1845 through 40-1875.

Kuhn, M., ed.

Glacier oscillation, Glacial meteorology, Glacier mass balance, Sedimentation, Climatic changes, Moraines, Paleoclimatology, Mountain glaciers, Ice sheets, Climatic factors, Meetings.

40-1845

Glaciological and climatic controls on lake sedimentation, Canadian Rocky Mountains.

Leonard, E.M., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.35-42, 14 refs., With German summary.

Lacustrine deposits, Glacial deposits, Outwash, Mountain glaciers, Sedimentation, Sediment transport, Paleoclimatology, Canada—Rocky Mountains.

40-1846

Lake ice cover as a temperature index for monitoring climate perturbations.

Tramoni, F., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.43-49, 13 refs., With German summary.

Barry, R.G., Key, J.

Air temperature, Lake ice, Ice cover effect, Climatic changes, Freezep, Ice breakup, Degree days, Monitors, Seasonal variations, Temperature variations.

40-1847

Evolution of postglacial sedimentation in an Alpine lake: Funtensee, Northern Calcareous Alps.

Müller, J., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.51-57, 4 refs., With German summary.

Schmidt, R.

Sedimentation, Palynology, Lacustrine deposits, Paleoclimatology, Climatic changes, Alpine glaciation, Pollen, Austria—Funtensee.

40-1848

Paleoclimatic and paleoecologic investigation of sediment cores from southern Bavarian and Alpine lakes. Michler, G., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.59-66, 12 refs., With German summary.

Lacustrine deposits, Climatic changes, Paleoclimatology, Paleocology, Sedimentation, Drill core analysis, Alpine glaciation, Geochemistry, Germany—Bavaria.

40-1849

Meerfelder Maar Lake deposits.

Negendank, J.F.W., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.67-70, 5 refs., With German summary.

Lacustrine deposits, Glacial deposits, Sedimentation, Paleoclimatology, Palynology, Geochemistry, Climatic changes, Pleistocene.

40-1850

Isotopic and chemical investigations of two stratified lakes in the Canadian Arctic.

Jeffries, M.O., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.71-78, 11 refs., With German summary.

Krouse, H.R.

Lake water, Isotope analysis, Water chemistry, Salinity, Ice cover effect, Paleoclimatology, Canada—Ellesmere Island.

40-1851

Implications of Holocene palaeoclimatic changes for the glacier hydrology of the Southwest Yukon.

Johnson, P.G., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.165-174, 8 refs., With German summary.

Suspended sediments, Glacial hydrology, Sedimentation, Geomorphology, Moraines, Rivers, Valleys, Canada—Yukon Territory.

40-1852

Glacier and climate fluctuations on Mount Kenya, East Africa.

Karlén, W., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.195-201, 23 refs., With German summary.

Glacier oscillation, Climatic changes, Lacustrine deposits, Runoff, Paleoclimatology, Kenya—Kenya, Mt.

40-1853

Recent glacier distribution and present climate in the central Andes of South America.

Jordan, E., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.213-224, Refs. p.222-224., With German summary.

Mountain glaciers, Climatic factors, Snow line, Precipitation (meteorology), Distribution, Glacier ablation, Bolivia—Andes.

40-1854

Glacier variations and climate of the late Quaternary in the subtropical and mid-latitude Andes of Argentina.

Stingl, H., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.225-228, 7 refs., With German summary.

Garleff, K.

Glacier oscillation, Mountain glaciers, Climatic changes, Paleoclimatology, Moraines, Argentina—Andes.

40-1855

Plio-pleistocene cyclic sedimentation in the Kashmir Basin, Northwestern Himalaya.

Burbank, D.W., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.229-236, 15 refs., With German summary.

Grant, M.J.

Glaciation, Sedimentation, Climatic changes, Paleoclimatology, Grain size, Pleistocene, Geological maps, Stratigraphy, Spectra.

40-1856

Glacier variations in Himalayas and Karakorum.

Röthlisberger, F., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.237-249, 28 refs., With German summary.

Geyh, M.A.

Glacier oscillation, Radioactive age determination, Paleoclimatology, Carbon isotopes, Moraines, Stratigraphy, Himalaya Mountains, Karakorum.

40-1857

Recent fluctuations of the Yala (Dakpatsen) Glacier, Langtang Himal, reconstructed from annual moraine ridges.

Ono, Y., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.251-258, 16 refs., With German summary.

Glacier oscillation, Moraines, Glaciation, Mountain glaciers, Himalaya Mountains.

40-1858

Glacial fluctuations in the central Southern Alps, New Zealand: Documentation and implications for environmental change during the last 1000 years.

Gellatly, A.F., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.259-264, 21 refs., With German summary.

Glacier oscillation, Mountain glaciers, Moraines, Climatic changes, Paleoclimatology, New Zealand—Alps.

40-1859

Holocene glacier variations in New Zealand (South Island).

Gellatly, A.F., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.265-273, 14 refs., With German summary.

Röthlisberger, F., Geyh, M.A.

Glacier oscillation, Moraines, Radioactive age determination, Carbon isotopes, Paleoclimatology, Stratigraphy, New Zealand—South Island.

40-1860

Reliability tests and interpretation of C-14 dates from Palaeosols in glacier environments.

Geyh, M.A., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.275-281, 11 refs., With German summary.

Röthlisberger, F., Gellatly, A.F.

Glacier oscillation, Soil composition, Radioactive age determination, Paleocology, Carbon isotopes, Lichens, Organic soils, Stratigraphy.

40-1861

Toward computation of steady-state profiles of ice sheets.

Yakowitz, S., et al., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.283-289, 4 refs., With German summary.

Hutter, K., Szidarovsky, F.

Ice models, Ice sheets, Profiles, Ice physics, Ice temperature, Ice mechanics, Glacier flow, Mathematical models, Temperature distribution.

40-1862

Heat budget of the antarctic ice sheet.

Oerlemans, J., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.291-299, 9 refs., With German summary.

Jonker, P.J.

Ice sheets, Ice thermal properties, Ice temperature, Glacier mass balance, Thermodynamics, Drainage, Ice growth, Surface temperature, Ice cover thickness, Altitude.

Averaged over an entire drainage basin of a polar ice sheet, the thermodynamic equation takes a simple form. In particular, dissipative heating can be obtained directly from the release of gravitational energy. When ice-accumulation rate, surface temperature, elevation and ice thickness are known, the mean temperature of the ice leaving the drainage basin can be calculated in the case of equilibrium. We have applied this procedure to the drainage basins of the Antarctic Ice Sheet. Mean basal outlet temperatures appear to vary between -21.3 and -8.3 °C. The latter value was found for the basin that feeds the Ross Ice Shelf. Drainage basins with higher surface elevation generally have lower outlet temperatures, in spite of the fact that ice thickness is generally greater. Assigning a characteristic length scale to a drainage basin makes it possible to estimate the typical base stress, and by assuming a balance between discharge and accumulation, the global flow parameter. Sensitivity to changes in mass balance can be studied, including the temperature feedback on ice flow. The procedure is applied to one drainage basin, which shows that temperature feedback almost doubles the sensitivity of mean ice thickness to changes in accumulation.

40-1863

Review of glacier changes in West Greenland.

Weidick, A., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.301-309, 17 refs., With German summary.

Glacier oscillation, Land ice, Ice edge, Glacier mass balance, Paleoclimatology, Ice sheets, Greenland.

40-1864

Accumulation gradients in Greenland and mass balance response to climatic changes.

Ambach, W., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.311-317, 8 refs., With German summary.

Kuhn, M.

Glacier mass balance, Climatic changes, Glacier heat balance, Glacier alimentation, Cloud cover, Altitude, Glacier ablation, Greenland.

40-1865

Some results of climatic investigations of Adelle Land, Eastern Antarctica.

Wendler, G., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.319-327, 14 refs., With German summary.

Kodama, Y.

Glacial meteorology, Meteorological data, Ice edge, Temperature gradients, Wind velocity, Wind direction, Air temperature, Atmospheric pressure, Antarctica—Adelle Coast.

Meteorological data from six automatic weather stations in Adelle Land stretching from Dome C (3280 m) to the ocean were analyzed. Some of the findings are the following: a) The temperature gradient along the slope of Eastern Antarctica is above adiabatic for 10 months of the year. Only during two midsummer months does it reach the adiabatic rate. b) When going down from the dome towards the ocean, the wind speed increases, but reaches its maximum some distance from the ice edge. c) While the absolute minimum at Dome C is -84.6 °C the temperature at Dumont d'Urville some 1080 km NNE of Dome C, never dropped below -40.0 °C. d) For all stations a coreless winter was observed. e) Positive pressure anomalies were correlated with positive temperature deviations, and a more cross-slope wind. f) Except for Dome C the directional constancy of the wind is pronounced (monthly mean values around 0.9). (Auth. mod.)

40-1866

Recent retreat and ice velocity at Austre Okstindbre, Norway.

Andreasen, J.-O., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.329-340, 8 refs., With German summary.

Knudsen, N.T.

Glacier flow, Glacier ablation, Ice edge, Photogrammetric surveys, Ice creep, Velocity, Rheology, Basal sliding, Ice cover thickness, Strains.

40-1867

Holocene glacier fluctuations in eastern Iceland.

Sharp, M., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.341-349, 23 refs., With German summary.

Dugmore, A.

Glacier oscillation, Stratigraphy, Climatic changes, Paleoclimatology, Glaciation, Iceland.

40-1868

Attempt to reconstruct glaciological and climatological characteristics of 18 ka BP Ice Age glaciers in and around the Swiss Alps.

Haeberli, W., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.351-361, 17 refs., With German summary.

Penz, U.

Glacier surveys, Climate, Glaciology, Glacier flow, Shear stress, Paleoclimatology, Switzerland—Alps.

40-1869

Quantitative palaeoclimatic inferences from lateglacial snowline, timberline and rock glacier data, Tyrolean Alps, Austria.

Kerschner, H., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.363-369, 28 refs., With German summary.

Rock glaciers, Glaciation, Snow line, Paleoclimatology, Climatic changes, Forest lines, Glacier surveys, Precipitation (meteorology), Austria—Alps.

40-1870

Cirque glacier regime and neoglaciation, Brooks Range, Alaska.

Calkin, P.E., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.371-378, 13 refs., With German summary.

Ellis, J.M., Haworth, L.A., Burns, P.E.

Cirque glaciers, Glaciation, Glacial meteorology, Climatic changes, Glacier flow, Lichens, History, Glacier mass balance, Paleoclimatology, United States—Alaska—Brooks Range.

40-1871

Information on paleo-precipitation on a high-altitude glacier Monte Rosa, Switzerland.

Schotterer, U., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.379-388, 12 refs., With German summary.

Oeschger, H., Wagenbach, D., Münich, K.O.

Mountain glaciers, Precipitation (meteorology), Paleoclimatology, Ice cores, Drill core analysis, Atmospheric composition, Switzerland—Monte Rosa.

40-1872

Comparison of the H-2 and O-18 content of ice cores from a temperate Alpine glacier (Vernagtferner, Austria) with climatic data.

Baker, D., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.389-395, 9 refs., With German summary.

Mountain glaciers, Ice composition, Climatic factors, Ice drills, Isotope analysis, Drill core analysis, Stratigraphy, Temperature variations, Radioactive age determination, Austria—Alps.

40-1873

Energy balance calculations from five years' meteorological records at Vernagtferner, Oetzal Alps.

Escher-Vetter, H., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.397-402, 6 refs., With German summary.

Glacial meteorology, Heat balance, Runoff, Solar radiation, Air temperature, Precipitation (meteorology), Wind velocity, Meltwater, Heat flux, Austria—Vernagtferner.

40-1874

Period of glacier advances in the Alps, 1965 to 1980.

Patzelt, G., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.403-407, 6 refs., With German summary.

Glacier oscillation, Glacier mass balance, Climatic factors, Air temperature, Precipitation (meteorology), Austria—Alps, Switzerland—Alps.

40-1875

Fluctuations of climate and mass balance: different responses of two adjacent glaciers.

Kuhn, M., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1985, Vol.21, p.409-416, 3 refs., With German summary.

Glacier oscillation, Glacier mass balance, Climatic factors, Glacier flow, Climatic changes, Topography, Time factor, Altitude, Austria—Alps.

40-1876

Engineering and geological processes. [Inzhenerno-geologicheskie protsessy].

Molokov, L.A., Moscow, Nedra, 1985, 206p., In Russian with abridged English table of contents enclosed. 44 refs.

Dams, Thixotropy, Engineering geology, Environmental impact, Construction, Slope processes, Industrial buildings, Permafrost beneath structures, Roads, Hydrothermal processes, Airports, Heat transfer, Frozen fines, Underground facilities, Clays, Hydraulic structures.

40-1877

Machines and equipment for the construction of bases and foundations. [Mashiny i oborudovanie dlia ustroystva osnovaniy i fundamentov].

Smorodinov, M.I., et al, Moscow, Mashinostroenie, 1985, 240p., In Russian with abridged English table of contents enclosed. 26 refs.

Foundations, Paludification, Soil compaction, Frozen fines, Soil stabilization, Artificial freezing, Drying, Pile driving, Construction materials, Clays, Water level, Cold weather construction, Pumps.

40-1878

Space variations of glacial deposits. [Prostranstvennaya izmenchivost' lednikovyykh otlozheniy].

Bondarik, G.K., et al, Moscow, Nedra, 1965, 239p., In Russian with abridged English table of contents enclosed. 50 refs.

Goral'chuk, M.I., Ierusalinskaya, E.N.

Glacial lakes, Glacial deposits, Moraines, Lacustrine deposits, Ground ice, Ice rafting, Engineering geology, Topographic effects, Minerals, River basins, Valleys.

40-1879

Breakup of ice fields at the concentration overfall. [Razrushenie lednykh pol' na sosredotochenom perepade].

Raspopin, G.A., et al, Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya. Izvestiya vysshikh uchebnykh zavedeniy. Stroitel'stvo i arkhitektura, 1985, No.8, p.94-99, In Russian. 5 refs.

Fomichev, B.S.

Dams, Spillways, Ice passing, Ice floes, Hydraulic structures, Ice breaking, Analysis (mathematics).

40-1880

Universal assembly for studying the processes of cutting frozen ground, ice and hard rocks. [Universal'nyi stend dlia issledovaniya protsessov rezaniya merzlogo grunta, l'da i tverdykh porod].

Nedoshivin, E.N., et al, Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya. Izvestiya vysshikh uchebnykh zavedeniy. Stroitel'stvo i arkhitektura, 1985, No.8, p.142-143, In Russian.

Alatin, S.D., Kulepov, V.F., Tarbaev, N.N.

Ice cutting, Frozen ground, Rock excavation, Test equipment.

40-1881

Vibration analysis of the Yamachiche lightpier.

Haynes, F.D., MP 1989, International Modal Analysis Conference, 4th, Los Angeles, CA, Feb. 3-6, 1986, Proceedings. Vol.1, Schenectady, N.Y., Union College, 1986, p.238-241, 11 refs.

Piers, Vibration, Ice loads, Shear strength, Mathematical models, Computer applications.

To determine its dynamic characteristics, the Yamachiche lightpier located in Lac St. Pierre, Quebec, was instrumented with geophones, accelerometers, and an inclinometer. Fifteen breakable bolts with failure strengths from 45,000 to 450,000 N were used to apply a step unloading force on the pier. The damping and stiffness were obtained from the data in the time domain. The natural frequencies and mode shapes were obtained from the data transformed into the frequency domain. A modal analysis computer program was used to verify the natural frequencies and mode shapes. A mathematical model was developed that includes translation, rotation, and shear beam deformation of the pier.

40-1882

Modal analysis as a tool to evaluate off-road vehicle body mounts.

Rakheya, S., International Modal Analysis Conference, 4th, Los Angeles, CA, Feb. 3-6, 1986, Proceedings. Vol.2, Schenectady, N.Y., Union College, 1986, p.1471-1475, 7 refs.

Tracked vehicles, Dynamic properties, Tests.

40-1883

Operation of gas pipelines in western Siberia. [Eksploataatsiya gazoprovodov Zapadnoy Sibiri].

Krylov, G.V., et al, Leningrad, Nedra, 1985, 288p., In Russian, with abridged English table of contents enclosed. 48 refs.

Matveev, A.V., Stepanov, O.A., Iakovlev, E.I. Gas pipelines, Permafrost beneath structures, Production, Gas production, Transportation, Storage, Cold weather operation.

40-1884

All-Union seminar on cloud physics, modification of hail processes and the problem of research for new hail prevention reagents. Proceedings. (Materialy).

Vsesoiuznyi seminar po fizike oblakov, aktivnym vozdel'stviyam na gradovye protsessy i probleme izyskaniia novykh reagentov dlia bor'by s gradom, Nal'chik, Oct. 26-28, 1981, Moscow, Gidrometeoizdat, 1985, 163p., In Russian. For selected papers see 40-1885 through 40-1890. Refs. passim.

Ice crystal nuclei, Weather modification, Supercooled clouds, Artificial nucleation, Cloud seeding, Smoke generators, Ice growth, Nucleating agents, Lead iodide, Silver iodide, Organic nuclei.

40-1885

Spectrum and ice-forming properties of aerosol particles in hailstones. (Spektr i l'dobrazuiushchie svoystva aerozol'nykh chastits soderzhashchikhsia v gradi-nakh).

Tisov, M.I., et al, Vsesoiuznyi seminar po fizike oblakov, aktivnym vozdel'stviyam na gradovye protsessy i probleme izyskaniia novykh reagentov dlia bor'by s gradom, Nal'chik, Oct. 26-28, 1981 (All-Union seminar on cloud physics, modification of hail processes and the problem of research for new hail prevention reagents) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1985, p.16-21, In Russian. 7 refs.

Berezinskii, N.A.

Cloud seeding, Aerosols, Nucleating agents, Ice crystal nuclei, Hailstones.

40-1886

Hailstone growth processes stipulated by the nonstationary thermodynamic structure of hail nuclei. (Osobennosti protsesssa rosta grada obuslovennye nestatsionarnost'iu termodinamicheskoi struktury gradovoi iacheiki).

Terškova, T.N., et al, Vsesoiuznyi seminar po fizike oblakov, aktivnym vozdel'stviyam na gradovye protsessy i probleme izyskaniia novykh reagentov dlia bor'by s gradom, Nal'chik, Oct. 26-28, 1981 (All-Union seminar on cloud physics, modification of hail processes and the problem of research for new hail prevention reagents) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1985, p.69-76, In Russian. 7 refs.

Bibilashvili, N.Sh., Koval'chuk, A.N.

Cloud seeding, Ice crystal nuclei, Ice growth, Hailstones, Aerosols.

40-1887

New stage in the search for effective ice-forming reagents. (Novyi etap v izyskanii effektivnykh l'dobrazuiushchikh reagentov).

Plaude, N.O., et al, Vsesoiuznyi seminar po fizike oblakov, aktivnym vozdel'stviyam na gradovye protsessy i probleme izyskaniia novykh reagentov dlia bor'by s gradom, Nal'chik, Oct. 26-28, 1981 (All-Union seminar on cloud physics, modification of hail processes and the problem of research for new hail prevention reagents) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1985, p.129-133, In Russian. 4 refs.

Solov'ev, A.D.

Supercooled clouds, Artificial nucleation, Aerosols, Ice crystal nuclei, Smoke generators, Lead iodide, Silver iodide, Organic nuclei.

40-1888

Studies of the ice-forming properties of liquid nitrogen. (Issledovanie l'dobrazuiushchikh svoystv zhidkogo azota).

Zhikharev, A.S., et al, Vsesoiuznyi seminar po fizike oblakov, aktivnym vozdel'stviyam na gradovye protsessy i probleme izyskaniia novykh reagentov dlia bor'by s gradom, Nal'chik, Oct. 26-28, 1981 (All-Union seminar on cloud physics, modification of hail processes and the problem of research for new hail prevention reagents) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1985, p.133-136, In Russian. Kondratenko, V.A.

Smoke generators, Weather modification, Coolants, Cloud seeding, Cloud physics, Silver iodide.

40-1889

Dependence of ice-forming activity of natural aerosols on size and supersaturations. (Zavisimost' l'dobrazuiushchei aktivnosti estestvennogo aerologia ot razmerov i perezyshechenii).

Berezinskii, N.A., et al, Vsesoiuznyi seminar po fizike oblakov, aktivnym vozdel'stviyam na gradovye protsessy i probleme izyskaniia novykh reagentov dlia bor'by s gradom, Nal'chik, Oct. 26-28, 1981 (All-Union seminar on cloud physics, modification of hail processes and the problem of research for new hail prevention reagents) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1985, p.136-141, In Russian. 7 refs.

Stepanov, G.V.

Cloud seeding, Nucleating agents, Ice crystal nuclei, Aerosols.

40-1890

Possibility of obtaining organic ice-forming aerosols by sublimation in pyrotechnical compounds. (O vozmozhnosti polucheniia l'dobrazuiushchikh aerozolei organicheskikh veshchestv vozgonkoj v pirotekhnicheskikh sostavakh).

Liadov, V.S., et al, Vsesoiuznyi seminar po fizike oblakov, aktivnym vozdel'stviyam na gradovye protsessy i probleme izyskaniia novykh reagentov dlia bor'by s gradom, Nal'chik, Oct. 26-28, 1981 (All-Union seminar on cloud physics, modification of hail processes and the problem of research for new hail prevention reagents) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1985, p.141-144, In Russian. 7 refs.

Likhachev, A.V., Molotkova, I.A.

Fog dispersal, Cloud seeding, Organic nuclei, Ice crystals, Smoke generators, Supercooled clouds.

40-1891

Results of the introduction of North American wood-plants to Siberia. (Itogi introduktsii severoamerikanskikh vidov drevesnykh rastenii v Sibirii).

Vstovskaia, T.N., Moscow. Glavnyi botanicheskii sad. Biulleten', 1985, Vol.136, p.10-15, In Russian. 11 refs.

Trees (plants), Introduced plants, Ecosystems, Cryogenic soils, Arctic landscapes, Plant ecology, Plant physiology.

40-1892

National winter storms operations plan.

U.S. Federal Coordinator for Meteorological Services and Supporting Research, U.S. National Oceanic and Atmospheric Administration. Report, Oct. 1981, FCM-P13-1981, 56p. + figs. PB82-158700.

Storms, Snowfall, Weather observations, Warning systems, Forecasting, Winter, Shores, Maps.

40-1893

Interpretation of soil cover in the non-chernozem area on space photographs of different kinds, for the compilation of small-scale soil maps. (Deshifirovanie pochvennogo pokrova nechernozem'ia na kosmicheskikh fotosnimkakh raznykh tipov pri sostavlenii melkomasshtabnykh pochvennykh kart).

Simakova, M.S., Issledovanie Zemli iz kosmosa, Nov.-Dec. 1985, No.6, p.22-27, In Russian with English summary. 3 refs.

Spaceborne photography, Photointerpretation, Soil mapping, Podsol, Peat, Organic soils.

40-1894

Role of litter in the post-fire dynamics of pine forests in southern taiga of western Siberia. (Rol' podstilki v poslepozharnoi dinamike iuzhnotaichnykh sosniakov Zapadnoi Sibiri).

Furiae, V.V., et al, Ekologiya, Nov.-Dec. 1985, No.6, p.18-24, In Russian. 25 refs.

Zlobina, L.P.

Litter, Forest soils, Forest fires, Taiga, Revegetation, Plant ecology, Ecosystems.

40-1895

Seasonal growth of pine shoots and coniferous needles in southern and northern Karelia. (Sezonnyi rost pobegov i khvoi sosny obyknovnoi v iuzhnoi i severnoi Karelii).

Kishchenko, I.T., et al, Ekologiya, Nov.-Dec. 1985, No.6, p.61-63, In Russian. 5 refs.

Grudin, I.V.

Plant ecology, Cryogenic soils, Taiga, Plant location, Growth.

40-1896

Massive, artificial geotechnical foundations for engineering structures built on loess. (Sozdanie geotekhnicheskikh massivov v osnovanii inzhenernykh sooruzhenii na lessakh).

Mechnikov, B.I., et al, Inzhenernaia geologiya, Nov.-Dec. 1985, No.6, p.3-14, In Russian. 11 refs.

Nesterov, A.I., Osipov, V.I.

Loess, Foundations, Rheology, Thixotropy, Bearing strength, Construction materials, Wettability.

40-1897

Charts for evaluating potential thermokarst development induced by technology in western Siberia. (Karty otsenki potentsial'noi vozmozhnosti razvitiia tekhnogennogo termokarsta na severe Zapadnoi Sibiri).

Parmuzin, S.IU., et al, Inzhenernaia geologiya, Nov.-Dec. 1985, No.6, p.81-88, In Russian. 7 refs.

Shamanova, I.I.

Foundations, Permafrost beneath structures, Thermokarst, Permafrost thermal properties.

40-1898

Seismic methods of controlling earth structures built on loess. (Opyt primeneniia seismicheskikh metodov dlia kontrolya kachestva vozvedeniia zemlianykh sooruzhenii iz lessovykh gruntov).

Chebikasova, E.V., Inzhenernaia geologiya, Nov.-Dec. 1985, No.6, p.95-101, In Russian. 14 refs.

Earth dams, Soil compaction, Loess, Earth fills, Seismic surveys, Seismic velocity.

40-1899

Modelling of the structure of amorphous ice.

Popescu, M., Journal of non-crystalline solids, Oct. 1985, 75(1/3), p.483-488, 11 refs.

Ice structure, Ice models, Temperature effects, Pressure, Extraterrestrial ice.

40-1900

Soil freezing response: influence of test conditions. McCabe, E.Y., et al, Geotechnical testing journal, June 1985, 8(2), MP 1990, p.49-58, 22 refs.

Kettle, R.J.

Soil freezing, Frost heave, Soil compaction, Frost resistance, Soil pressure, Temperature gradients, Tests.

The response of soils to freezing has been assessed in terms of frost heave, and the heaving pressure developed when the specimen is restrained. As both techniques have been suggested for assessing frost susceptibility, it was considered essential to determine the influence of the test conditions on the soil response. This investigation was concerned with specimen preparation, specimen size, and freezing procedure. The test material consisted of an artificially produced matrix, into which controlled amounts of coarse aggregate could be blended. This reduced the likelihood of variation in the results because of random changes in the test materials. The results clearly demonstrated the sensitivity of both heave and heaving pressure to the test conditions. When modified or new test methods are being formulated, it is essential to consider the influence of such factors, particularly when making comparisons between different testing techniques. Such modifications may also require changes in the particular criteria used to assess frost susceptibility.

40-1901

Dye aggregation in freezing aqueous solutions.

Schirra, R., Chemical physics letters, Sep. 13, 1985, 119(5), p.463-466, 11 refs.

Freezing, Solutions, Luminescence, Water structure, Spectra, Ions, Temperature effects.

40-1902

Forms and marks of glacial erosion on bedrock: significance, terminology, illustration. (Les formes et les marques de l'erosion glaciaire du plancher rocheux: signification, terminologie, illustration).

Laverdiere, C., et al, Palaeogeography, palaeoclimatology, palaeoecology, Oct. 1985, 51(1-4), p.365-387, In French with English summary. 21 refs.

Girardot, P., Dionne, J.C.

Glacial erosion, Ice scoring, Glacier flow, Palaeoclimatology, Ice mechanics, Abrasion, Striations.

40-1903

Forms, figures and glacial sedimentary facies of muddy tidal flats of cold regions. (Formes, figures et faciès sédimentaires glaciaires des estrans vaseux des régions froides).

Dionne, J.C., Palaeogeography, palaeoclimatology, palaeoecology, Oct. 1985, 51(1-4), p.415-451, In French with English summary. Refs. p.447-451.

Glacial deposits, Frost action, Ice mechanics, Ice scoring, Palaeoclimatology, Grain size, Surface properties, Tides.

40-1904

Tips for winter storage and start-up. Construction equipment, Dec. 15, 1985, 72(7), p.68-69.

Equipment, Cold weather operation, Winter maintenance.

## 40-1905

## Alaska.

Walker, H.J., World's coastline. Edited by E.C.F. Bird and M.L. Schwartz, New York, Van Nostrand Reinhold, 1985, p.1-10, 20 refs.

Coastal topographic features, Climatic factors, Ice conditions, Sea ice distribution, Geology, United States—Alaska.

## 40-1906

Two native antarctic vascular plants, *Deschampsia antarctica* and *Colobanthus quitensis*: a new southernmost locality and other localities in the Antarctic Peninsula.

Komarkov, V., et al, *Arctic and alpine research*, Nov. 1985, 17(4), p.401-416, Refs. p.414-416.

Poncet, S., Poncet, J.

Polynyas, Plants (botany), Polar regions, Vegetation patterns, Antarctica—Antarctic Peninsula.

The only two native antarctic vascular plants, *Deschampsia antarctica* Desv. and *Colobanthus quitensis* (Kunth.) Bartl., occur mainly in the three areas with the most extensive ice-free surfaces along the Antarctic Peninsula: South Shetlands, area between Cierva Point and Cape Garcia, and Marguerite Bay. *Deschampsia antarctica* has a considerably wider ecological range than *C. quitensis* and occurs alone in the majority (58%) of the 116 localities listed; *C. quitensis* occurs alone only in 3% of the localities. Twenty-four new localities are reported. The new southernmost locality for both species are the Terra Firma Is. Cape Calmette is the new southernmost locality of *D. antarctica* on the Antarctic Peninsula mainland. A newly found thick moss-bank dominated by *Polytrichum alpestre* Hoppe is reported from Lainez Point, Pourquoi Pas I., Marguerite Bay. (Auth. mod.)

## 40-1907

Moisture availability and lichen growth: the effects of snow cover and streams on lichenometric measurements.

Innes, J.L., *Arctic and alpine research*, Nov. 1985, 17(4), p.417-424, 23 refs.

Lichens, Snow cover effect, Streams, Moisture, Growth, Distribution, Soil water.

## 40-1908

Estimation of soil temperature from climatic variables at Barrow, Alaska, U.S.A.

MacLean, S.F., Jr., et al, *Arctic and alpine research*, Nov. 1985, 17(4), p.425-432, 15 refs.

Ayers, M.P.

Soil temperature, Active layer, Tundra, Permafrost thermal properties, Meteorological data, Models, Air temperature, Cloud cover, Diurnal variations, United States—Alaska—Barrow.

## 40-1909

Grain-size distribution of the insoluble component of contemporary collan deposits in the alpine zone, Front Range, Colorado, U.S.A.

Thorn, C.E., et al, *Arctic and alpine research*, Nov. 1985, 17(4), p.433-442, 28 refs.

Darnody, R.G.

Eolian soils, Grain size, Periglacial processes, Glacial deposits, Alpine tundra, Paleoclimatology, Geochemistry, Mountains, Particle size distribution, United States—Colorado—Front Range.

## 40-1910

Grain-size sampling and characterization of eolian lag surfaces within alpine tundra, Niwot Ridge, Front Range, Colorado, U.S.A.

Thorn, C.E., et al, *Arctic and alpine research*, Nov. 1985, 17(4), p.443-450, 17 refs.

Darnody, R.G.

Eolian soils, Grain size, Alpine tundra, Particle size distribution, United States—Colorado—Niwot Ridge.

## 40-1911

Channel form adjustment in supraglacial streams, Austre Okstindbreen, Norway.

Knighton, A.D., *Arctic and alpine research*, Nov. 1985, 17(4), p.451-466, 30 refs.

Channels (waterways), Glacial rivers, Stream flow, Glacier surfaces, Ice loads, Glacier ablation, Velocity, Norway—Austre Okstindbreen.

## 40-1912

Antarctic meteorites. (Meteority Antarktidy). Tsvetkov, V.I., et al, *Meteoritika*, 1983, Vol.42, p.93-101, In Russian. 25 refs.

Ivanov, A.V.

DLC QB755.A4

Cosmic dust, Glacier flow, Glacier ablation, Antarctica—Queen Fabiola Mountains, Antarctica—Allan Hills.

The large number of meteorites found in Antarctica as of Dec. 1969 is discussed. It is reported that currently there are more than 6000 meteorite samples in Antarctica, which is a significant contribution to the world meteorite collection. Their distribution by class, type and location and date of finding is tabulated and mapped. The principal locations of the findings—the

Yamato Mountains and the Allan Hills—are described in terms of the topographic and glaciological conditions conducive to meteorite accumulation.

## 40-1913

Calculating the distribution of ice-forming aerosols in convective clouds when introduced into the layer beneath the cloud. (Raschet rasprostraneniya v konvektivnykh oblakakh l'dobrazuiushchikh aerizolei vvedennykh v podoblachnyy sloj).

Klingo, V.V., et al, *Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy*, 1984, Vol.482, p.20-29, In Russian. 13 refs.

Faizulin, B.Sh.

Smoke generators, Ice crystal nuclei, Weather modification, Aerosols, Distribution, Cloud seeding, Analysis (mathematics).

## 40-1914

Influence of stationary electric fields on the dispersion of freezing temperatures of supercooled drops. (Vliyanie postoiannogo elektricheskogo polya na dispersiyu temperatury zamerzaniya pereokhlazhdennykh kapel').

Klingo, V.V., *Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy*, 1984, Vol.482, p.123-125, In Russian. 3 refs.

Cloud droplets, Freezing points, Electric fields, Ice crystal growth, Analysis (mathematics).

## 40-1915

SFM tekniska notiser, No.2, 1985.

Samarbetorganisationen for Fordon-Markforskning, SFM, Cooperative Organization for Vehicle Field-Testing, technical digest, No.2, 1985, 1985, No.2, 131p., In English, German and Swedish.

Tracked vehicles, Tundra, Bibliographies, Trafficability, Permafrost, Glaciology, Sea ice, Land ice, Freeze thaw cycles.

## 40-1916

Geology and seismicity of the BAM zone (from Lake Baykal to Tynda). Hydrogeology. (Geologiya i seismichnost' zony BAM (ot Baikala do Tyndy). Gi-drogeologiya).

Lomonosov, I.S., ed, Novosibirsk, Nauka, 1984, 167p., In Russian with English table of contents enclosed. Refs. p.162-166.

Hydrogeology, Artesian water, Permafrost hydrology, Subpermafrost ground water, Suprapermafrost ground water, Baykal Amur railroad, Naleds, Ground ice, Frost heave.

## 40-1917

Freezing of small rivers in Transbaikalia. (Promerzanie mal'kikh rek Zabaikal'ia).

Tikhotskil, K.G., et al, *Voprosy geografii*, 1981, Vol.118, p.183-187, In Russian.

Tiunina, I.K., Evstigneev, V.M.

Permafrost distribution, River ice, Ice cover thickness, Icebound rivers, Discontinuous permafrost, Runoff, River basins, Discharge, Landscape types.

## 40-1918

Studies of paludal natural complexes in the central Russian Plain. (Izucheniya zabolochennykh prirodnykh kompleksov tsentra Russkoj Ravniny).

Viktorov, S.V., et al, *Voprosy geografii*, 1982, Vol.121, p.122-135, In Russian.

Smirnova, E.D., Shvidchenko, L.G.

Land reclamation, Swamps, Peat, Landscape types, Classifications, Human factors, Snow cover effect, Drainage.

## 40-1919

Modelling mountain river discharge when information is limited. (Modelirovanie stoka gorn'nykh rek v usloviyakh ogranichennoj informatsii).

Golubtsov, V.V., *Moscow. Kazakhskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.91, p.3-18, In Russian. 26 refs.

Soil water migration, Snow water equivalent, Rivers, Seasonal freeze thaw, Alimentation, Soil freezing, Discharge, River basins, Permeability, Runoff, Snow cover distribution, Mathematical models.

## 40-1920

Changes of infiltration parameters during soil freezing and thawing. (Ob izmenenii infiltratsionnogo parametra pri promerzani i ottaivani pochvogruntov).

Golubtsov, V.V., *Moscow. Kazakhskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.91, p.18-25, In Russian. 30 refs.

Soil freezing, Frost penetration, Soil water migration, Seepage, Permeability, Phase transformations, Freeze thaw cycles, Modeling.

## 40-1921

Calculating freezeup dates for Kapchagayskoe reservoir. (O raschete dat ustanovleniya ledostava na Kapchagayskom vodokhranilishche).

Popova, V.P., *Moscow. Kazakhskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.91, p.98-102, In Russian.

Freezeup, Icebound lakes, Ice conditions, Ice formation, Ice cover thickness.

## 40-1922

Changes in ice regime of the Aral Sea. (Ob izmenenii ledovogo rezhima Aral'skogo moria).

Chistiaeva, S.P., *Moscow. Kazakhskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.91, p.102-111, In Russian. 10 refs.

Salt lakes, Ice formation, Fast ice, Ice conditions, Sea water, Ice cover thickness, Water level, Evaporation.

## 40-1923

Snow avalanche regimes in low mountains of western Altai and their forecasting. (Rezhim snezhnykh lavin v nizkogor'iax Zapadnogo Altaia i metody ikh prognozirovaniia).

Kolesnikov, E.I., et al, *Moscow. Kazakhskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.91, p.111-127, In Russian. 16 refs.

Popov, V.I.

Avalanche triggering, Avalanche engineering, Snow accumulation, Avalanche forecasting, Snow depth, Statistical analysis, Snow density.

## 40-1924

Oxygen isotope-climate record from the Law Dome, Antarctica.

Morgan, V.I., *Climatic change*, Dec. 1985, 7(4), p.415-426, 25 refs.

Ice cores, Ice dating, Oxygen isotopes, Climatic changes, Antarctica—Law Dome.

Ice cores from a 473 m deep borehole at the summit of the Law Dome have been analysed for oxygen isotope ratio variations. Values averaged over each core section (nominally 2 m long) are used to compile a continuous record for climatic studies and the fine detail measurements which show annual variations are used to establish a date of deposition versus depth relationship. The temperature record derived from the isotope data shows a warm period from 300 to 1000 AD followed by a cooling which, after a partial recovery between 1400 and 1600 AD reaches a maximum around 1800. Temperatures then increase during the nineteenth and twentieth centuries to almost the same values as prior to 1000 AD. (Auth.)

## 40-1925

Antarctic ice sheet: a surface model for satellite altimeter studies.

Drewry, D.J., et al, Models in geomorphology, edited by M.J. Woldenberg, Boston, Allen & Unwin, 1985, p.1-23, 30 refs.

McIntyre, N.F., Cooper, P.

DLC GB21.M56 1985

Ice sheets, Height finding, Airborne radar, Ice cover thickness, Spacecraft, Models.

The authors discuss the use and potential of new satellite-based radar which will measure, with great accuracy, the surface elevations of the ice in Antarctica. This will allow the calculation of changes in ice volume and could make possible monitoring of climatic change in real time. Knowing the slopes on the ice surface will make it possible to infer the dynamics of ice flow and the pattern of katabatic winds. Mathematical models describe the surface topography, incorporating large-, medium- and small-scale features. These equations applied to satellite data can be used to generate a series of block diagrams which are visual models for various features of the ice sheet. (Auth.)

## 40-1926

Antarctic ice sheet: an analog for Northern Hemisphere paleo-ice sheets.

Hughes, T.J., et al, Models in geomorphology, edited by M.J. Woldenberg, Boston, Allen & Unwin, 1985, p.25-72, Refs. p.67-72.

Denton, G.H., Fastook, J.L.

DLC GB21.M56 1985

Ice sheets, Topographic features, Mass balance, Sea level, Polar regions.

The authors identify features in Antarctica and suggest analogous features in the Arctic during the Quaternary. They locate terrestrial and marine components of the ice sheets, divides with their domes and saddles, and the ice streams and their relation to changing sea level. They propose a late Wisconsin ice divide over western and southern Hudson Bay and a major ice stream through Hudson Strait. Finally, they suggest that while the antarctic ice sheet mass balance is affected by precipitation and by calving caused by changing sea level, the decline of the northern ice sheet was mainly caused by summer melting on the margins and to a lesser degree by marine instability mechanisms and precipitation. (Auth.)

40-1927

**[Proceedings].**  
Snow Symposium, 1st, Hanover, NH, August 1981, *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, SR 82-17, 324p., ADB-091 442, Refs. passim. For individual papers see 40-1928 through 40-1946.  
**Snow surveys, Snowfall, Blowing snow, Military operation, Snow optics, Snow acoustics, Transmission, Meetings, Scattering, Snow water equivalent, Infrared radiation, Visibility.**

40-1928

**SNOW ONE atmospheric and transmission measurements.**  
Olsen, R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.1-16. ADB-091 442.  
Brown, D., Butterfield, J.  
**Cold weather operation, Military operation, Snowfall, Snow optics, Optical properties, Acoustic measurement, Fog, Visibility, Transmission.**

40-1929

**Airborne-Snow Concentration Measuring Equipment.**  
Lacombe, J., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, MP 1981, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.17-46, ADB-091 442, 12 refs.  
**Snowfall, Snowflakes, Falling bodies, Measuring instruments, Visibility, Airborne equipment, Accuracy, Transmission.**

A brief introduction to the function of the Airborne-Snow Concentration Measuring Equipment (ASCME) and its usefulness for characterizing the winter environment is given. The deficiencies of alternative systems are identified. ASCME hardware and basic system operation are described in detail. The governing design equation and choice of design parameters are discussed, along with estimates of system accuracy. Evidence of ASCME's satisfactory performance during its inaugural operation at SNOW-ONE is presented and design improvements to be incorporated and used during SNOW ONE-A are mentioned. Snowfall rate and airborne-snow concentration data are also compared, showing a weak correlation between the two parameters at low concentration levels.

40-1930

**Snow and fog particle size measurements.**  
Berg, R.H., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, MP 1982, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.47-58, ADB-091 442, 6 refs.  
**Snowflakes, Fog, Particle size distribution, Electromagnetic prospecting, Transmission, Snow crystal structure, Light scattering, Infrared radiation, Falling bodies, Data processing.**

During the SNOW-ONE field measurements Knollenberg 2-D grey imaging probes were used to characterize airborne snow. This application of the probes presents problems due to the shape and orientation of the snow particles. The techniques used to surmount these problems are described. Results are presented in a comparison between the total snowflake area concentration and the transmittance in the visible and infrared.

40-1931

**Meteorology and observed snow crystal types during the SNOW-ONE experiment.**  
Bilello, M.A., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, MP 1983, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.59-75, ADB-091 442, 8 refs.  
**Snow crystal structure, Snowfall, Meteorological factors, Snowflakes, Falling bodies, Electrical measurement, Optical properties, Snowstorms.**

A survey of the surface pressure systems, weather fronts, and air masses that influenced northern Vermont during the periods of snowfall in January and February 1981 was conducted. Vertical profiles of the temperature and moisture, and observations of the falling snow crystals made at the SNOW-ONE site were also retrieved for the same time period. This information was used to conduct a study on associations between meteorological conditions and observed snow crystal characteristics. Examples of the results obtained from the various snowfall events that occurred during the field test period are presented. This study was conducted with the ultimate objective of associating large-scale weather patterns with the on-site frozen particle characterization measurements, and the data obtained concurrently by the electro-optical sensor systems.

40-1932

**Meteorological measurements at Camp Ethan Allen Training Center, Vermont.**  
Bates, R., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, MP 1984, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.77-112, ADB-091 442, 4 refs.  
**Meteorological instruments, Snowfall, Precipitation gages, Air temperature, Snowstorms, Dew point, Humidity, Wind velocity, Wind direction, Snow water equivalent, Visibility, Snow depth.**

This paper contains a detailed description of the meteorological instruments used by CRREL at SNOW-ONE, together with information on their performance and reliability. Some of the data collected are discussed and analyzed. Redfield (1981) presented a substantial amount of the meteorological data obtained by CRREL during SNOW-ONE, including the hourly summaries of observations recorded by a meteorological team from the Atmospheric Sciences Laboratory (ASL), Maynard, Massachusetts.

40-1933

**Geometry and permittivity of snow.**  
Colbeck, S.C., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, MP 1985, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.113-131, ADB-091 442, 37 refs.  
**Snow physics, Electromagnetic properties, Snow electrical properties, Snow crystal structure, Porosity, Snow water content, Unfrozen water content.**

The geometry and porosity of dry snow varies widely depending on the history of conditions. The permittivity of dry snow increases with increasing ice content but is not greatly affected by the shapes of the ice particles. In wet snow the permittivity increases with liquid content and the geometry is very important. However, the liquid-like layer has little effect on permittivity. The permittivity is described using Polder and van Santeen's mixing formulae and approximations of the geometries at high and low liquid contents. It is shown that the common assumption of liquid shells over ice spheres is both physically incorrect and leads to large errors.

40-1934

**Snow calorimetric measurement at SNOW-ONE.**  
Fisk, D., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, MP 1986, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.133-138, ADB-091 442.  
**Snow thermal properties, Snow water content, Unfrozen water content, Calorimeters, Temperature measurement, Snow melting, Freezing, Accuracy, Tests.**

Free water content of fallen snow was measured near the surface and with depth during the SNOW-ONE Field Experiment using both freezing and melting calorimetric methods. The principles and procedures of each method are described. Test data are presented, possible sources of error are examined, and the problems and relative merits of each method are discussed. Subsequent work and future plans are described.

40-1935

**Problems in snow cover characterization.**  
O'Brien, H.W., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, MP 1987, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.139-147, ADB-091 442, 5 refs.  
**Snow optics, Snow physics, Infrared spectroscopy, Light transmission, Unfrozen water content, Grain size, Military operation, Reflectivity, Wave propagation, Snow cover, Snow density, Snowflakes.**

Comparison of spectral reflectance measurements of snow cover with theoretical predictions based on hypothetical snow grain size indicate that the appropriate dimensions for commensuration may be illusive indeed. Measurements of near-infrared reflectance of snow covers *in situ* are presented in illustration and some potential ramifications inferred.

40-1936

**High-angle snow reflectivity measurements at 35 GHz.**

Knox, J.E., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.149-160, ADB 091 442.  
**Snow acoustics, Reflectivity, Military operation, Transmission, Snow surface, Air temperature, Polarization (waves).**

40-1937

**Some natural obscurant categories.**  
Harper, M.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.163-175, ADB-091 442, 50 refs.  
Gibson, F.P.

**Snow physics, Snowfall, Military operation, Infrared radiation, Visibility, Radiation, Attenuation, Precipitation (meteorology), Fog, Rain.**

40-1938

**Visible and infrared transmittance measurements.**  
Curcio, J.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.177-183, ADB-091 442, 2 refs.

Haight, K.W., Woytko, M.A.  
**Light transmission, Snowfall, Blowing snow, Transmissivity, Spectra, Visibility.**

40-1939

**Near-millimeter wave measurements at SNOW-ONE.**

Nemarch, J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.185-206, ADB-091 442, 7 refs.

Wellman, R.J., Rocha, D., Jr., Wetzel, G.B.  
**Snowfall, Attenuation, Backscattering, Sound waves, Snow water equivalent, Military operation, Radar tracking, Electronic equipment, Meteorological factors, Polarization (waves).**

40-1940

**Millimeter wavelength radar propagation measurements at SNOW-ONE.**

Bauerle, D.G., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.207-222, ADB-091 442.

**Light transmission, Snowfall, Blowing snow, Electromagnetic properties, Attenuation, Military operation, Spectra, Wave propagation, Snow water equivalent, Snow cover effect, Tests, Radar tracking.**

40-1941

**Particle size measurement of man-made obscurants.**  
Farmer, W.M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.223-242, ADB-091 442, 2 refs.

Schwartz, F.A., Binkley, M.A.  
**Attenuation, Optical properties, Military operation, Particle size distribution, Light transmission, Tests, Cold weather operation, Spectra.**

40-1942

**Performance of an airborne infrared sensor.**  
Glick, B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.243-254, ADB-091 442.

Kohr, R., Malone, P., Tuchman, A.  
**Infrared equipment, Airborne radar, Military operation, Snow cover effect, Electronic equipment, Detection, Tests, Infrared photography, Temperature effects.**

40-1943

**Empirical modeling of visible and infrared extinction in snow.**

Seagraves, M.A., *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.255-267, ADB-091 442, 10 refs.

**Snowfall, Light transmission, Electromagnetic properties, Infrared equipment, Attenuation, Snow crystals, Wave propagation, Mathematical models, Optical properties, Meteorological factors.**

40-1944

**Modeling the dynamics and optical effects of snowstorms, Part I. Optical considerations.**

Ebersole, J.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*. Special report, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.269-273, ADB-091 442.

Caulfield, H.J., Spaulding, T.E.  
**Snow optics, Snowstorms, Snowfall, Light transmission, Infrared equipment, Models, Meteorological factors, Wave propagation, Snow crystal structure, Snowflakes, Tests.**

## 40-1945

Importance of scattering effects of snow crystals. Winchester, L.W., Jr., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.277-287, ADB-091 442, 20 refs.  
Gimmetad, G.G., Lee, S.R., Wetzel, K.B. Snow optics, Electromagnetic properties, Light scattering, Electronic equipment, Snow crystal structure, Snowfall, Blowing snow, Military operation, Experimentation.

## 40-1946

Effects of snow cover on contrast for clear and hazy atmospheres.  
Turner, R.E., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1982, 82-17, Snow Symposium, 1st, Hanover, NH, Aug. 1981. Proceedings, p.289-324, ADB-091 442, 8 refs.  
Snow optics, Snow cover effect, Military operation, Reflectivity, Light transmission, Atmospheric physics, Solar radiation, Albedo, Visibility, Wave propagation, Electronic equipment, Spectra, Mathematical models.

## 40-1947

Milne Point Unit—small but welcome. *Oil and gas journal*, June 24, 1985, 83(25), p.55-58.  
Drilling, Oil wells, Permafrost preservation, United States—Alaska—North Slope.

## 40-1948

Odeco designs massive deepwater Arctic rig.  
Chabot, L., *Oil and gas journal*, June 24, 1985, 83(25), p.59-63, 4 refs.  
Offshore structures, Offshore drilling, Ice loads, Engineering, Design, Ice models, Tests.

## 40-1949

First Arctic offshore field, Endicott, on decade-long way to production.  
Curtis, M.L., et al, *Oil and gas journal*, June 24, 1985, 83(25), p.64-70.  
Huxley, D.B.  
Offshore structures, Offshore drilling, Artificial islands, Oil wells, Gravel, Pipelines, Roads, Beaufort Sea.

## 40-1950

Bechtel studies subsea freezing behavior. *Oil and gas journal*, June 24, 1985, 83(25), p.72.  
Freezing, Foundations, Artificial islands, Underwater ice, Subsea permafrost, Bearing strength, Shear strength.

## 40-1951

Operating tips boost arctic diesel efficiency.  
Gardner, W.J., *Oil and gas journal*, June 24, 1985, 83(25), p.73-77.  
Diesel engines, Cold weather operation, Fuel additives, Lubricants.

## 40-1952

Computer program uses simulation method to help manage weather-sensitive projects.  
Chen, H., *Oil and gas journal*, June 24, 1985, 83(25), p.80-86, 12 refs.  
Offshore drilling, Ice conditions, Offshore structures, Ice floes, Computer applications, Weather forecasting.

## 40-1953

Arctic waterflood pipelines in Prudhoe Bay injection project require protection analysis.  
Arnold, C.L., *Oil and gas journal*, June 24, 1985, 83(25), p.89-92.  
Pipelines, Flooding, Freezing points, Protection, Heating, Design, Sea water, United States—Alaska—Prudhoe Bay.

## 40-1954

Wärtsilä Vasa experience in the Canadian Arctic.  
*Naval architect*, Mar. 1985, p.E139-E140.  
Icebreakers, Cold weather operation, Diesel engines, Marine transportation.

## 40-1955

Ice models and a lattice version of the Dirac equation.  
Schotte, K.D., et al, *Zeitschrift für Physik B: Condensed matter*, 1985, 60(2-4), p.255-263, 11 refs.  
Iwabuchi, S., Truong, T.T.  
Ice models, Lattice structures, Hydrogen bonds, Wave propagation, Oxygen, Ions, Analysis (mathematics).

## 40-1956

Freezing of water in porous solids, glass transition or phase transition. (Zum Gefrieren von Wasser in porösen Festkörpern, Glas- oder Phasenübergang). Pfeifer, H., et al, *Annalen der Physik*, 1985, 42(4-6), p.496-506. In German with English summary. 23 refs.  
Oehme, W., Siegel, H.  
Freezing, Solids, Phase transformations, Porosity, Liquid solid interfaces, Aggregates, Molecular structure, Protons.

## 40-1957

Existence for a problem in ground freezing.  
Di Benedetto, E., et al, *Nonlinear analysis, theory, methods and applications*, 1985, 9(9), p.953-967, 12 refs.  
Elliott, C.M.  
Soil freezing, Heat transfer, Conduction, Convection, Soil water, Artificial freezing, Artificial thawing, Phase transformations, Soil stabilization, Analysis (mathematics).

## 40-1958

Model analysis of the measured concentration of organic gases in the Norwegian Arctic.  
Isaksen, I.S.A., et al, *Journal of atmospheric chemistry*, June 1985, 3(1), p.3-27, Refs. p.23-27.  
Hov, O., Penkett, S.A., Semb, A.  
Air pollution, Haze, Hydrocarbons, Aerosols, Models, Gases, Chemical analysis, Human factors.

## 40-1959

Field observations of electromagnetic pulse propagation in dielectric slabs.  
Arcone, S.A., *Geophysics*, Oct. 1984, 49(10), MP 1991, p.1763-1773, 15 refs.  
Electromagnetic properties, Ice cover effect, Wave propagation, Dielectric properties, Ice sheets, Profiles, Velocity, Reflection, Refraction.  
The propagation of electromagnetic pulses in naturally occurring dielectric surface layers has been examined. Pulse duration used in field experiments reported here has been on the order of nanoseconds with pulse bandwidths in the high VHF to low UHF band. The layers were sheets of fresh water ice and granite at thicknesses ranging between .4 and 4 m. Both transverse electric (TE) and transverse magnetic (TM) modes were attempted but only the TE propagation could be interpreted. Analog recordings of wide-angle reflection and refraction (WARR) profiles were taken and recorded in a continuous graphic display. The displays allowed easy identification of phase fronts thereby facilitating study of the dispersion of the pulses. The phase and group velocities of the wave-group packets agree well with the velocities predicted from dispersion curves derived from the modal waveguide equation. In one case the Airy phase of wave-packet propagation occurred. The best measure of the dielectric constant of the layer was the frequency of the air wave.

## 40-1960

Estimating regional snow water equivalent with a simple simulation model.  
Kattelmann, R.C., et al, *Water resources bulletin*, Apr. 1985, 21(2), p.273-280, 20 refs.  
Berg, N.H., Pack, M.K.  
Snow water equivalent, Snowmelt, Watersheds, Precipitation (meteorology), Air temperature, Models, Water balance, Mountains, United States—California—Sierra Nevada.

## 40-1961

Proceedings.  
Workshop on Ice Penetration Technology, Hanover, NH, June 12-13, 1984, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, 345p., ADB-093 880, Refs. passim. Discussions, p.319-336. For individual papers see 40-1962 through 40-1965.  
Penetration tests, Ice cover strength, Ice breaking, Military operation, Ice drills, Ice cover thickness, Meetings, Sea ice, Submarines.

## 40-1962

Shopper's guide to ice penetration.  
Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, MP 1992, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.1-35, ADB-093880, 11 refs.  
Ice drills, Ice cover thickness, Penetration, Ice cover strength, Rotary drills, Projectile penetration, Hydraulic jets, Percussion drills, Lasers, Thermal drills, Explosion effects, Analysis (mathematics), Ice blasting.

## 40-1963

Sea ice characteristics and ice penetration probabilities in the Arctic Ocean.  
Weeks, W.F., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, MP 1993, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.37-65, ADB-093880, 21 refs.  
Sea ice distribution, Penetration, Pack ice, Drift, Ice cover thickness, Ice crystal structure, Ice salinity, Ice temperature, Ice deformation, Arctic Ocean.

## 40-1964

Modeling of Arctic sea ice characteristics relevant to naval operations.  
Hibler, W.D., III, et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, MP 1994, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.67-91, ADB-093880, 21 refs.  
Weeks, W.F.  
Ice navigation, Sea ice distribution, Ice mechanics, Drift, Ice cover thickness, Surface roughness, Ice surface, Ice electrical properties, Ice loads, Ice strength, Models, Rheology, Velocity.

## 40-1965

Hugoniot of water ice.  
Gaffney, E.S., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.93-124, ADB-093880, 50 refs.  
Ice physics, Ice structure, High pressure ice, Ice elasticity, Shock waves, Stresses, Ice density, Porosity, Phase transformations, Velocity, Pressure, Temperature effects.

## 40-1966

Ice drilling and coring systems—a retrospective view.  
Sellmann, P.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, MP 1999, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.125-127, ADB-093 880.  
Rand, J.H.  
Ice cores, Ice drills, Ice coring drills, Equipment, Penetration.

## 40-1967

Field experience with thermal drilling in sea ice.  
Francois, R.E., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.129, ADB-093 880.  
Ice drills, Thermal drills, Sea ice, Ice melting, Ice cutting, Penetration.

## 40-1968

Penetration of ice by shaped explosive charges.  
Jones, J.M., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.131-136, ADB-093 880, 1 ref.  
Ice cover strength, Explosives, Penetration tests.

## 40-1969

Penetration of shaped charges into ice.  
Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, MP 1995, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.137-148, ADB-093 880, 7 refs.  
Ice cover strength, Military operation, Penetration tests, Explosives, Ice deformation.

Shaped charges fired from air into ice give holes of typical form for cohesive solids. There are only a few reported results from test shots in ice, but supplementary data can be obtained by adjusting the results from tests in ice-bonded soil in accordance with target density. Present indications are that charges with narrow angle cones (appr. 45 deg) can penetrate about 16 cone diameters, giving a hole diameter near mid-depth of about 1/3 of the cone diameter. Charges with wide-angle cones (60-90 deg) might penetrate about 12 cone diameters, giving a hole diameter near mid-depth of about 2/3 cone diameters. Optimum standoff in air seems to be around 4 cone diameters. So far, we have no data for shaped charges fired into ice under water.

## 40-1970

Thermal water jet ice drill.  
Beverly, C.N., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.149-163, ADB-093 880, 5 refs.  
Ice drills, Hydraulic jets, Thermal drills, Models, Penetration tests.

40-1971

Sea ice penetration—experimental program. Young, C.W., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.165-192. ADB-093 880.

Military operation, Ice cover strength, Penetration tests, Sea ice, Ice cover thickness, Impact strength, Temperature effects.

40-1972

DREP research into ice penetration. Verrall, R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.193-195. ADB-093 880.

Ice drills, Ice cover thickness, Penetration tests, Thermal drills, Projectile penetration.

40-1973

Shoulder-launched projectile for subsurface measurement of iceberg temperatures. Diemand, D., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.197-207. ADB-093 880, 8 refs.

Ice temperature, Ice solid interface, Ice mechanics, Icebergs, Projectile penetration, Impact strength, Ice strength, Ice thermal properties.

40-1974

Ice penetration tests. Garcia, N.B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, MP 1996, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.209-240. ADB-093 880, 6 refs.

Farrell, D., Mellor, M.

Penetration tests, Ice strength, Grain size, Flexural strength, Brittleness, Impact strength, Velocity, Ice density, Projectile penetration, Ice temperature.

40-1975

Mechanics of ice cover breakthrough. Kerr, A.D., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, MP 1997, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.245-262. ADB-093 880, 12 refs.

Ice cover strength, Ice breaking, Penetration tests, Impact strength, Loads (forces), Floating ice, Bearing strength, Time factor, Military operation, Analysis (mathematics).

40-1976

Ice penetration by scale models and theory. Stirbis, P.P., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.265-283. ADB-093 880.

Ice strength, Penetration tests, Loads (forces), Models, Soil strength, Stresses.

40-1977

Penetration into geological targets. Forrestal, M.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.285-308. ADB-093 880, 10 refs.

Dalton, C.

Penetration tests, Ice strength, Sea ice, Soil strength, Mathematical models, Experimentation, Military operation.

40-1978

Surfacing submarines through ice. Assur, A., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Dec. 1984, SR 84-33, MP 1998, Workshop on Penetration Technology, Hanover, NH, June 12-13, 1984. Proceedings, p.309-318. ADB-093 880, 8 refs.

Submarines, Ice cover effect, Penetration, Ice mechanics, Ice breaking, Stresses, Strains, Sea ice, Analysis (mathematics), Loads (forces).

40-1979

Thermal regime of Arctic ice cap in winter during artificial variation of the radiation balance of its upper surface. Bogorodskii, V.V., et al, *Soviet meteorology and hydrology*, 1984, No.5, p.54-61. For Russian original see 40-248. 7 refs.

Sukhorukov, K.K.

Ice cover thickness, Ice surface, Heat transfer, Radiation balance, Mathematical models, Arctic Ocean.

40-1980

Soil formation processes and the evolution of soils. (Protsessy pochvoobrazovaniia i evoliutsiia pochvy). Targul'ian, V.O., ed, Moscow, Nauka, 1985, 249p., In Russian with abridged English table of contents enclosed. Refs. p.238-248.

Velichko, A.A., ed.

Soil formation, Soil composition, Taiga, Saline soils, Alpine landscapes, Human factors, Cryogenic soils, Mountain soils, Forest soils.

40-1981

Daily course of convection under ice in a lake. Petrov, M.P., et al, *Soviet meteorology and hydrology*, 1985, No.1, p.73-79, Translated from *Meteorologiya i gidrologiya*. 5 refs.

Sutyryn, G.G.

Icebound lakes, Subglacial observations, Water flow, Temperature effects, Solar radiation, Convection.

40-1982

Cryological phenomena and features of channel deformation of the mouth area of the Taz River. Levashov, A.A., *Soviet meteorology and hydrology*, 1985, No.1, p.92-94, Translated from *Meteorologiya i gidrologiya*.

Permafrost beneath rivers, Shore erosion, Shoreline modification, Frozen ground thermodynamics, Ground ice, Ice veins, Ice melting.

40-1983

Possibilities of remote detection of dynamic processes in a snow-ice medium by electromagnetic radiation. Belotserkovskii, A.V., et al, *Soviet meteorology and hydrology*, 1985, No.1, p.99-103, Translated from *Meteorologiya i gidrologiya*. 8 refs.

Mikhnevskii, N.D.

Avalanche mechanics, Remote sensing, Measuring instruments.

40-1984

Modeling artificial crystallization and formation of crystallization in supercooled stratiform clouds. Bulkov, M.V., et al, *Soviet meteorology and hydrology*, 1985, No.2, p.96-106, Translated from *Meteorologiya i gidrologiya*. 31 refs.

Bakhanov, V.P.

Supercooled clouds, Cloud seeding, Ice crystal nuclei.

40-1985

Method of comprehensive short-term prediction of ice and hydrological conditions in Arctic seas. Krutskikh, V.A., et al, *Soviet meteorology and hydrology*, 1985, No.3, p.74-79, Translated from *Meteorologiya i gidrologiya*. 4 refs.

Vanda, I.U.A., Mustafin, N.V.

Sea ice distribution, Ice conditions, Ice forecasting, Polar regions.

40-1986

Mean long-term ice coverage of the White Sea. Lukin, L.R., et al, *Soviet meteorology and hydrology*, 1985, No.4, p.60-65, Translated from *Meteorologiya i gidrologiya*. 6 refs.

Snegovskoi, S.V.

Sea ice distribution, Ice conditions, Ice forecasting, Long range forecasting.

40-1987

Classification of avalanches of freshly fallen snow. Kanaev, L.A., et al, *Soviet meteorology and hydrology*, 1985, No.4, p.80-86, Translated from *Meteorologiya i gidrologiya*. 11 refs.

Tsarev, B.K., Dushkin, V.S.

Avalanches, Classifications, Avalanche formation, Avalanche forecasting.

40-1988

Investigation of distant transport of sulfates in the Soviet Arctic according to snow cover pollution. Vasilenko, V.N., et al, *Soviet meteorology and hydrology*, 1985, No.4, p.101-104, Translated from *Meteorologiya i gidrologiya*. 13 refs.

Nazarov, I.M., Fridman, Sh.D.

Wastes, Snow cover distribution, Pollution, Snow impurities, Arctic regions.

40-1989

Role of snow cover in sulfate pollution of surface water. Breslav, E.I., et al, *Soviet meteorology and hydrology*, 1985, No.5, p.43-47, Translated from *Meteorologiya i gidrologiya*. 6 refs.

Taiga, Steppes, River basins, Water pollution, Soil pollution, Snow cover distribution.

40-1990

Passive and active microwave studies of wet snowpack properties. Chang, A.T.C., et al, *Nordic hydrology*, 1985, 16(2), p.57-66, 15 refs.

Wet snow, Microwaves, Radiometry, Snow water equivalent, Snow depth, Brightness, Snow temperature, Scattering, Polarization (waves).

40-1991

Problems of mechanics in glaciology and geocryology. (Zadachi mekhaniki v gliatsiologii i geokriologii). Grigorian, S.S., ed, Moscow, Universitet, 1984, 151p., In Russian. For individual papers see 40-1991 through 40-1999. Refs. passim.

Krass, M.S., ed.

Ice physics, Glacier flow, Permafrost structure, Extraterrestrial ice, Ground ice, Snow physics, Frost shattering, Climatic changes, Glacier oscillation, Thermokarst, Theories, Ice cracks, Ice surface, Permafrost hydrology, Frost heave, Mathematical models, Computerized simulation.

40-1992

Climatic influence on evolution of thermokarst. (Vliianie klimata na evoliutsiiu termokarsta). Grigorian, S.S., et al, *Zadachi mekhaniki v gliatsiologii i geokriologii* (Problems of mechanics in glaciology and geocryology) edited by S.S. Grigorian and M.S. Krass, Moscow, Universitet, 1984, p.3-20, In Russian. 5 refs.

Guseva, E.V., Krass, M.S.

Thermokarst, Permafrost structure, Climatic changes, Permafrost hydrology, Mathematical models.

40-1993

Model of snow and ice for the desorption processes. (Model' l'da i snega dlia raznoshchennogo razlucheniia). Liakhov, G.M., *Zadachi mekhaniki v gliatsiologii i geokriologii* (Problems of mechanics in glaciology and geocryology) edited by S.S. Grigorian and M.S. Krass, Moscow, Universitet, 1984, p.21-43, In Russian. 15 refs.

Porous materials, Solids, Mathematics, Computerized simulation, Ice physics, Ice physics, Ice blasting, Vibration, Electromagnetic waves, Wave propagation.

40-1994

Forced oscillations of Dzhungarskiy glacier (Dzhungarskiy Alatau). (Vynuzhennyye kolebaniia lednika Shumskogo (Dzhungarskiy Alatau)). Shumskii, P.A., et al, *Zadachi mekhaniki v gliatsiologii i geokriologii* (Problems of mechanics in glaciology and geocryology) edited by S.S. Grigorian and M.S. Krass, Moscow, Universitet, 1984, p.44-63, In Russian. 15 refs.

Krass, M.S., Cherkasov, P.A.

Glacier ice, Ice surface, Ice mechanics, Surveys.

40-1995

Two-dimensional stationary problems on mechanics of glaciers. (Dvumernyye statsionarnyye zadachi mekhaniki lednikov). Larina, T.B., et al, *Zadachi mekhaniki v gliatsiologii i geokriologii* (Problems of mechanics in glaciology and geocryology) edited by S.S. Grigorian and M.S. Krass, Moscow, Universitet, 1984, p.64-73, In Russian. 4 refs.

Shumskii, P.A.

Glacier flow, Glacier beds, Glacier ice, Ice mechanics, Heat transfer, Thermal conductivity, Heat loss, Analysis (mathematics).

40-1996

Practical application of mathematical theory of frost shattering. (O p.akticheskom primenении matematicheskoi teorii morozobolnogo rastreskivaniia). Gevorkian, S.G., *Zadachi mekhaniki v gliatsiologii i geokriologii* (Problems of mechanics in glaciology and geocryology) edited by S.S. Grigorian and M.S. Krass, Moscow, Universitet, 1984, p.74-81, In Russian. 37 refs.

Frost action, Periglacial processes, Frost shattering, Polygonal topography, Theories, Analysis (mathematics).

40-1997

**Origin and mechanism of formation of some types of tectonic relief similar to exaration in the eastern Baltic Shield.** (O proiskhozhdenii i mekhanizme formirovaniia nekotorykh tipov tektonicheskogo rel'efa skhodnogo s ekzaratsionnym (na primere Vostochnoi chasti Baltiiskogo shchita)). Chuvardinskii, V.G., Zadachi mekhaniki v gliatsiologii i geokriologii (Problems of mechanics in glaciology and geocryology) edited by S.S. Grigorian and M.S. Krass, Moscow, Universitet, 1984, p.82-104, In Russian. 34 refs.  
**Topography, Frost action, Frost shattering, Glacial erosion, Striations, Tectonics, Faults.**

40-1998

**Mathematical model of frost heave of freezing soils.** (Matematicheskaya model' pucheniia pri promerzaniia grunta). Grigorian, S.S., et al, Zadachi mekhaniki v gliatsiologii i geokriologii (Problems of mechanics in glaciology and geocryology) edited by S.S. Grigorian and M.S. Krass, Moscow, Universitet, 1984, p.105-115, In Russian. 11 refs.  
 Guscva, E.V., Krass, M.S.  
**Soil freezing, Frost penetration, Soil water migration, Frost heave, Mathematical models.**

40-1999

**Ice on planets of the Solar system.** (L'dy na planetakh solnechnoi sistema). Krass, M.S., Zadachi mekhaniki v gliatsiologii i geokriologii (Problems of mechanics in glaciology and geocryology) edited by S.S. Grigorian and M.S. Krass, Moscow, Universitet, 1984, p.116-149, In Russian. 43 refs.  
**Extraterrestrial ice, Mars (planet), Permafrost distribution, Polar atmospheres, Jupiter (planet).**

40-2000

**Timbering, maintenance and preservation of mining excavations.** (Kreplenie, podderzhanie i okhrana gorn'nykh vyrobotok). Gritsko, G.I., ed, Novosibirsk, 1983, 113p., In Russian. For selected papers see 40-2001 through 40-2008. Refs. passim.  
**Mine shafts, Coal, Permafrost control, Placer mining, Permafrost thermal properties, Ventilation, Timbering, Supports, Walls.**

40-2001

**Calculating mean loading on multilayer supports of vertical shafts built under complex geological and mining conditions with artificial freezing.** (Raschet srednikh nagruzok na mnogosloinnykh krep'nykh stvolov sooruzhaemykh v slozhnykh gornogeologicheskikh usloviakh sposobom zamorazhivaniia). Protosenia, A.G., Kreplenie, podderzhanie i okhrana gorn'nykh vyrobotok (Timbering, maintenance and preservation of mining excavations) edited by G.I. Gritsko, Novosibirsk, 1983, p.12-19, In Russian. 4 refs.  
**Mine shafts, Artificial freezing, Timbering, Excavation, Loads (forces).**

40-2002

**Method of calculating timbering for main shafts of mines in permafrost areas.** (Metodika rascheta krep' kapital'nykh vyrobotok oblasti mnogoletnei merzloty). Iudin, M.M., Kreplenie, podderzhanie i okhrana gorn'nykh vyrobotok (Timbering, maintenance and preservation of mining excavations) edited by G.I. Gritsko, Novosibirsk, 1983, p.45-47, In Russian.  
**Mine shafts, Supports, Timbering, Permafrost beneath structures, Permafrost thermal properties.**

40-2003

**Peculiarities of pillarless preparation of coal layers under conditions of northeastern USSR.** (Osobennosti vstselsikovo podgotovki ugo'nykh plastov v usloviakh Severo-Vostoka SSSR). Izakson, V.IU., et al, Kreplenie, podderzhanie i okhrana gorn'nykh vyrobotok (Timbering, maintenance and preservation of mining excavations) edited by G.I. Gritsko, Novosibirsk, 1983, p.55-57, In Russian.  
 Strel'nikov, K.M., Glazkov, I.U.F.  
**Coal, Mine shafts, Timbering, Permafrost thermal properties, Mining, Excavation.**

40-2004

**Stability of shafts and loads on timbering under permafrost conditions.** (Ustoiichivost' vyrobotok i nagruzka na krep' v usloviakh mnogoletnei merzloty). Samokhin, A.V., et al, Kreplenie, podderzhanie i okhrana gorn'nykh vyrobotok (Timbering, maintenance and preservation of mining excavations) edited by G.I. Gritsko, Novosibirsk, 1983, p.78-80, In Russian. 1 ref.  
 Izakson, V.IU.  
**Mine shafts, Permafrost thermal properties, Timbering, Loads (forces).**

40-2005

**Increasing the reliability of transport shafts built in northern placer mines.** (Povyshenie ustoiichivosti transportnykh stvolov v usloviakh rossyynykh shakht Severa). Sherstov, V.A., et al, Kreplenie, podderzhanie i okhrana gorn'nykh vyrobotok (Timbering, maintenance and preservation of mining excavations) edited by G.I. Gritsko, Novosibirsk, 1983, p.80-81, In Russian.  
 Gorokhova, A.A.  
**Coal, Excavation, Transportation, Mine shafts, Permafrost.**

40-2006

**Increasing the stability and service life of inclined shafts built in permafrost.** (Uvelichenie dolgozhechnosti i nadezhnosti naklonnykh stvolov, prodlennyykh v mnogoletnemerzlykh porodakh). Egorov, I.K., et al, Kreplenie, podderzhanie i okhrana gorn'nykh vyrobotok (Timbering, maintenance and preservation of mining excavations) edited by G.I. Gritsko, Novosibirsk, 1983, p.82-84, In Russian.  
 Tarasov, N.I.  
**Coal, Permafrost thermal properties, Blasting, Mine shafts, Slope stability.**

40-2007

**Temperature effect on the strength and deformation of rocks in relation to the stability of main shafts.** (Vliianie temperatury na prochnost' i deformiruemost' gorn'nykh porod v svyazi s zadachei ustoiichivosti kapital'nykh gorn'nykh vyrobotok). Dranishnikov, S.B., et al, Kreplenie, podderzhanie i okhrana gorn'nykh vyrobotok (Timbering, maintenance and preservation of mining excavations) edited by G.I. Gritsko, Novosibirsk, 1983, p.84-86, In Russian.  
 Zvonarev, N.K.  
**Mine shafts, Permafrost control, Permafrost thermal properties, Frozen rock strength, Deformation, Temperature variations.**

40-2008

**Modeling the deformation of thermorheologically complex media.** (Modeli deformatsii termoreologicheskii slozhnykh sredy). Rusov, B.P., Kreplenie, podderzhanie i okhrana gorn'nykh vyrobotok (Timbering, maintenance and preservation of mining excavations) edited by G.I. Gritsko, Novosibirsk, 1983, p.107-110, In Russian. 7 refs.  
**Porous materials, Permafrost control, Construction materials, Rheology, Frozen rocks, Thermal insulation, Ice formation.**

40-2009

**Description of sea ice in climate models.** (Opisanie morskogo l'da v modeli klimata). Pashchenko, V.P., Moscow, AN SSSR. Vychislitel'nyi tsentr, 1985, 15p., In Russian. 9 refs.  
**Ice surface, Sea ice distribution, Albedo, Ice cover thickness, Ice physics, Ice models, Dynamic properties, Mathematical models, Heat transfer, Hydrothermal processes, Meteorological factors, Climatic factors.**

40-2010

**Geography of the world ocean; the Arctic and southern oceans.** (Geografiia Mirovogo okeana; Severnyi Ledovitii i Iuzhnyi okeany). Treshnikov, A.F., ed, Leningrad, Nauka, 1985, 501p., In Russian. Refs. p.459-466  
 Sal'nikov, S.S., ed.  
**Sea ice distribution, Maps.**

The second half of this book consists of the description and mapping of the southern ocean. This portion is divided into three parts, with 8, 2, and 4 chapters, respectively. The antarctic continent and the surrounding waters are discussed in terms of their physical, geographic, climatological and biological characteristics, their economics, political geography, and their mineral and marine resource potential.

40-2011

**Stress trajectories across the northeast Alaska Range.** (Gedney, L., *Seismological Society of America. Bulletin*, Aug. 1985, 75(4), p.1125-1134, 21 refs.  
**Earthquakes, Seismology, Stresses, Tectonics, United States—Alaska.**

40-2012

**Trapping and release of gases by water ice and implications for icy bodies.** (Ba-Nun, A., et al, *Icarus*, Sep. 1985, 63(3), p.317-332, 46 refs.  
 Herman, G., Laufer, D., Rappaport, M.L.  
**Ice composition, Extraterrestrial ice, Low temperature tests, Chemical analysis, Gases, Water vapor, Condensation, Temperature effects.**

40-2013

**Glacier melting and runoff in river basins of Central Asia.** (Taianie i stok s lednikov v basseynakh rek Srednei Azii). Kononov, V.G., Leningrad, Gidrometeoizdat, 1985, 238p., In Russian with abridged English table of contents enclosed. 278 refs.  
**Glacial rivers, Glacial deposits, Glacial hydrology, Moraines, Glacier ablation, Runoff, Snow line, River basins, Solar radiation, Mountain glaciers, Heat balance, Mass balance.**

40-2014

**Pine forests of the Far North.** (Sosniaki Kraiного Severa). Tsvetkov, V.F., et al, Moscow, Agropromizdat, 1985, 115p., In Russian with English table of contents enclosed. 30 refs.  
 Semenov, B.A.  
**Forest soils, Cryogenic soils, Taiga, Plant physiology, Revegetation.**

40-2015

**Studies of earth moving machines.** (Issledovaniia mashin dlia zemlianykh rabot). Nedorezov, I.A., ed, Moscow, Transport, 1984, 134p., In Russian. For selected papers see 40-2016 through 40-2018. Refs. passim.  
**Earthwork, Equipment, Cutting tools, Frozen ground mechanics, Permafrost physics, Design, Tests, Roadbeds, Drains, Cold weather construction.**

40-2016

**Ways of creating effective means of mechanization for building drains and designing roadbeds.** (Puti sozdaniia effektivnykh sredstv mekhanizatsii dlia sooruzheniia vodoootvodov i planirovki zemlianogo polotna). Prokof'ev, V.P., et al, Issledovaniia mashin dlia zemlianykh rabot (Studies of earth moving machines) edited by I.A. Nedorezov, Moscow, Transport, 1984, p.11-14, In Russian.  
 Chernavskii, V.P., Tsvetkov, V.I.  
**Earthwork, Roadbeds, Drains, Construction equipment, Design, Cold weather construction.**

40-2017

**Stand examinations of the working process of a profile cutter when excavating drains in frozen ground.** (Stendovye issledovaniia rabochego protessa profil'noi frezy pri razrabotke vodoootvodov v merzlykh gruntakh). Myrzashev, S.M., Issledovaniia mashin dlia zemlianykh rabot (Studies of earth moving machines) edited by I.A. Nedorezov, Moscow, Transport, 1984, p.25-30, In Russian. 4 refs.  
**Earthwork, Excavation, Equipment, Frozen ground, Design, Tests.**

40-2018

**Theoretical analysis of the process of impact-sinking of a digging tool into frozen ground.** (Teoreticheskie issledovaniia protessa udarnogo pogruzeniia klovovidnogo rabochego organa v merzlyi grunt). Isaev, O.K., Issledovaniia mashin dlia zemlianykh rabot (Studies of earth moving machines) edited by I.A. Nedorezov, Moscow, Transport, 1984, p.54-60, In Russian. 6 refs.  
**Earthwork, Frozen ground mechanics, Excavation, Permafrost physics, Equipment, Cutting tools.**

40-2019

**Hydrophysical processes in rivers and reservoirs.** (Gidrofizicheskie protsessy v rekakh i vodokhranilishchakh). Debofskii, V.K., ed, Moscow, Nauka, 1985, 318p., In Russian. For selected papers see 40-2020 through 40-2026. Refs. passim.  
**Icebound lakes, Icebound rivers, Estuaries, Solar radiation, Fast ice, Polynyas, Tidal currents, Subglacial drainage, Hydrology, Heat transfer, Hydraulic structures, Ice conditions, Turbulent exchange, Water temperature, Stream flow, Velocity measurement, Measuring instruments, Arctic Ocean.**

40-2020

Propagation of long waves in an ice-covered channel. [Rasprostraneniye dlinnykh voln v rusle s ledianym pokrovom]. Debol'skaia, E.I., *Gidrofizicheskie protsessy v rekakh i vodokhranilishchakh* (Hydrophysical processes in rivers and reservoirs) edited by V.K. Debol'skii, Moscow, Nauka, 1985, p.35-46, In Russian. 8 refs.

Icebound rivers, Subglacial drainage, Hydraulic structures, Stream flow, Ice conditions, Ice friction, Analysis (mathematics).

40-2021

Changes in hydrophysical characteristics in a shallow estuary during winter. [Izmenchivost' gidrofizicheskikh kharakteristik v melkovodnom estuarii v zimnii period]. Muzylev, S.V., et al. *Gidrofizicheskie protsessy v rekakh i vodokhranilishchakh* (Hydrophysical processes in rivers and reservoirs) edited by V.K. Debol'skii, Moscow, Nauka, 1985, p.237-246, In Russian. 10 refs.

Lifshits, V.Kh., Petrov, M.P., Titov, V.S. Estuaries, Ice conditions, Fast ice, Sea water, River water, Water chemistry, Stream flow, Velocity measurement, Measuring instruments.

40-2022

Evolution of tidal waves in river estuaries with ice covers. [Evolutsiia prilivnoi volny v ust'e reki s ledianym pokrovom]. Zyrinov, V.N., et al. *Gidrofizicheskie protsessy v rekakh i vodokhranilishchakh* (Hydrophysical processes in rivers and reservoirs) edited by V.K. Debol'skii, Moscow, Nauka, 1985, p.246-256, In Russian. 15 refs.

Leibo, A.B. Tides, Wave propagation, Estuaries, Dynamic properties, Sea ice distribution, Analysis (mathematics).

40-2023

Calculating the propagation of floods in the estuaries of Siberian rivers, allowing for inhomogeneous distribution of ice cover. [Raschet rasprostraneniia polovodii v ust'akh sibirskikh rek s ucheto neravnomernogo raspredeleniia ledianogo pokrova]. Vinogradova, T.A., et al. *Gidrofizicheskie protsessy v rekakh i vodokhranilishchakh* (Hydrophysical processes in rivers and reservoirs) edited by V.K. Debol'skii, Moscow, Nauka, 1985, p.257-262, In Russian. 3 refs.

Nikiforovskaia, V.S. Estuaries, Flooding, Wave propagation, Icebound rivers, Ice conditions, Polar regions, Arctic Ocean, Hydrology.

40-2024

Effect of warm discharge waters on ice and thermal regimes in lower reaches of hydraulic power plants. [Ledotermicheski rezhim nizhnikh befov GES i vliianie na nego teplovykh stokov]. Liapin, V.E., et al. *Gidrofizicheskie protsessy v rekakh i vodokhranilishchakh* (Hydrophysical processes in rivers and reservoirs) edited by V.K. Debol'skii, Moscow, Nauka, 1985, p.263-269, In Russian. 8 refs.

Tregub, G.A., Razgovorova, E.L. Icebound rivers, Estuaries, Polynyas, Ice conditions, Hydraulic structures, Runoff, Wastes, Water temperature.

40-2025

Peculiarities of thermal and ice regimes in reservoirs of pumped-storage electric power plants. [Osobennosti ledotermicheskogo rezhima vodokhranilishch GAES]. Sokolov, I.N., et al. *Gidrofizicheskie protsessy v rekakh i vodokhranilishchakh* (Hydrophysical processes in rivers and reservoirs) edited by V.K. Debol'skii, Moscow, Nauka, 1985, p.269-273, In Russian. 3 refs.

Shatalina, I.N. Hydraulic structures, Water storage, Lakes, Ice conditions.

40-2026

Latitudinal and seasonal variations of daily nonuniformity of heat exchange between water bodies and the atmosphere. [Shirotnye i sezonnye izmeneniia vutritsuetchnoi neravnomernosti teplotnogo voboda s atmosferoi]. Volkova, E.V., *Gidrofizicheskie protsessy v rekakh i vodokhranilishchakh* (Hydrophysical processes in rivers and reservoirs) edited by V.K. Debol'skii, Moscow, Nauka, 1985, p.287-293, In Russian. 10 refs.

Lakes, Thermal regime, Ice conditions, Evaporation, Solar radiation, Heat transfer, Turbulent exchange.

40-2027

Dynamic compaction. Reckard, M.K., *Alaska. Department of Transportation and Public Facilities. Research notes*, Jan. 1986, 5(7), 2p.

Permafrost beneath roads, Embankments, Road maintenance, Settlement (structural), Compaction, Freeze thaw cycles, Dynamic loads.

40-2028

Heat loss factors for insulated building foundations. Rezek, J., *Alaska. Department of Transportation and Public Facilities. Research notes*, July 1985, 5(1), 2p.

Heat loss, Thermal insulation, Foundations, Buildings, Design.

40-2029

Roof icing. Kailing, S.H., *Alaska. Department of Transportation and Public Facilities. Research notes*, Apr. 1985, 4(10), 2p.

Icing, Roofs, Ventilation, Damage, Heat loss, Snowmelt, Countermeasures.

40-2030

Field and laboratory measurements of snow liquid water by dilution. Davis, R.E., et al. *Water resources research*, Sep. 1985, 21(9), p.1415-1420, 15 refs.

Dozier, J., LaChapelle, E.R., Perla, R. Snow water content, Unfrozen water content, Laboratory techniques.

40-2031

Alaska: ground-water resources. Sloan, C.E., et al. *U.S. Geological Survey. Water-supply paper*, (1985), No.2275, p.129-133, 11 refs.

Emery, P., Zenone, C. Water supply, Ground water, Permafrost hydrology, Glacial hydrology, Climatic factors, Water level, United States—Alaska.

40-2032

1500-year record of tropical precipitation in ice cores from the Quelccaya Ice Cap, Peru. Thompson, L.F., et al. *Science*, Sep. 6, 1985, 229(4717), p.971-973, 14 refs.

Mosley-Thompson, E., Bolzan, J.F., Koci, B.R. Mountain glaciers, Ice cores, Precipitation (meteorology), Climatic factors, Drill core analysis, Volcanoes, Glacier mass balance, Temperature distribution, Peru—Andes.

40-2033

Winter service in cities during the exceptional snowfalls in Jan. 1985. [Interventi di viabilita invernale in citta durante le eccezionali nevicate del gennaio 1985]. Baiano, G., *Neve international*, Sep. 1985, 27(3), p.38-50, In Italian with English summary.

Snow accumulation, Snowfall, Winter maintenance, Snow removal, Precipitation (meteorology), Italy.

40-2034

Installation of a radio link in maintaining a coordinated and rational winter service. [Un impianto di radio collegamento in un coordinato e razionale mantenimento della viabilita invernale]. Graziosi, F., et al. *Neve international*, Sep. 1985, 27(3), p.51-53, In Italian with English summary.

Colangeli, G. Radio communication, Winter maintenance, Road maintenance, Trafficability.

40-2035

Avalanche screens at Foppolo. [Paravalanghe a Foppolo]. Pessina, E., *Neve international*, Sep. 1985, 27(3), p.61-64, In Italian with English summary.

Avalanche formation, Snow fences, Roads, Trafficability, Protection, Damage, Countermeasures.

40-2036

New developments in Soviet nuclear Arctic ships. Brigham, I.W., *U.S. Naval Institute. Proceedings*, Dec. 1985, 111(12), p.131-133.

Icebreakers, Nuclear power, Ice navigation, Marine transportation.

40-2037

Permafrost research and engineering in China: a collection of papers selected from the 1979 to 1981 issues of the Chinese Journal of glaciology and cryopedology (Bingchuan dongtu). *National Research Council, Canada. Technical translation*, 1984, No.253, 305p, Translated from Chinese. For individual papers see 38-4234, 40-2038 through 40-2056.

Permafrost, Frozen ground strength, Geomorphology, Ground ice, Ground water, Periglacial processes, Mountains, Engineering, China.

40-2038

Thirty years of permafrost research and engineering in China. Chen, S., et al. *National Research Council, Canada. Technical translation*, 1984, No.253, p.9-24, For Chinese original see 35-2896. 19 refs.

Ting, J., Chung, P., Chou, C. Permafrost, Engineering geology, Research projects, Frozen ground, Earthwork, China.

40-2039

Certain distinctions between the permafrost of the Chinese Qinghai-Xizang (Tibetan) Plateau and that of the Canadian North. Cheng, K., *National Research Council, Canada. Technical translation*, 1984, No.253, p.25-33, For Chinese original see 35-2901.

Permafrost, Geomorphology, China, Canada.

40-2040

Problems of roadbed stability in the construction of an asphalt surface for the Qinghai-Xizang (Tibetan) highway in China's permafrost region. China. Ministry of Communications. Scientific Research Unit for the Ching-hai/Tibet Highway, *National Research Council, Canada. Technical translation*, 1984, No.253, p.35-58, For Chinese original see 35-2902.

Roadbeds, Construction, Soil stabilization, Frost action, Stability, Mountains.

40-2041

Geotechnical classification of permafrost. Wu, T., *National Research Council, Canada. Technical translation*, 1984, No.253, p.59-76, For Chinese original see 35-2903.

Frozen ground strength, Permafrost, Engineering, Earthwork.

40-2042

Review of the achievements in the study of bases and foundations on frozen ground in China. Zhuo, C., *National Research Council, Canada. Technical translation*, 1984, No.253, p.77-89, For Chinese original see 35-79.

Frozen ground strength, Foundations, Pressure, Cold weather construction.

40-2043

Frozen soil and groundwater. Wen, B., *National Research Council, Canada. Technical translation*, 1984, No.253, p.91-92, For Chinese original see 35-82. 4 refs.

Frozen ground physics, Soil water migration.

40-2044

Selection and evaluation of water-supply sources in the Da and Xiao Hinggan Ling permafrost areas. Lin, F., *National Research Council, Canada. Technical translation*, 1984, No.253, p.93-104, For Chinese original see 35-85.

Permafrost hydrology, Water supply, Water table.

40-2045

Preliminary experimental study on the instantaneous strength of frozen sand. Lian, H., et al. *National Research Council, Canada. Technical translation*, 1984, No.253, p.105-115, For Chinese original see 35-86.

Zhao, L., Wang, J. Sands, Frozen ground strength, Temperature effects, Frozen fines.

40-2046

On geomorphological indicators of permafrost and the relation between glaciation and periglaciation. Cui, Z., *National Research Council, Canada. Technical translation*, 1984, No.253, p.117-132, For Chinese original see 35-117.

Periglacial processes, Permafrost physics, Ice wedges, Glaciation.

40-2047

Active layer at the southern foot of Tanggula Shan. Toug, B., et al. *National Research Council, Canada. Technical translation*, 1984, No.253, p.133-145, For Chinese original see 35-121. 4 refs.

Xie, Y., Guo, D., Wang, J. Active layer, Seasonal freeze thaw, Geocryology.

40-2048

Characteristics of ground ice along the Qinghai-Tibetan highway in the Fenghuo-Shan district. Li, J., et al. *National Research Council, Canada. Technical translation*, 1984, No.253, p.147-161, For Chinese original see 35-123.

Xing, Z. Ground ice, Ice composition, Temperature effects.

- 40-2049**  
Discussions and opinions on the paper "A geotechnical classification of permafrost".  
Zhang, C., *National Research Council, Canada. Technical translation*, 1984, No.253, p.163-170, For Chinese original see 35-128. 5 refs.  
Permafrost physics, Frozen ground mechanics, Frozen ground strength, Soil classification, Engineering.
- 40-2050**  
Modern periglacial processes in the central Tian Shan.  
Ji, Z., *National Research Council, Canada. Technical translation*, 1984, No.253, p.171-204, For Chinese original see 39-3694. 5 refs.  
Periglacial processes, Frost weathering, Freeze thaw cycles, Cirques, Frost heave, Climatic factors, Snow line, Mountains, China—Tian Shan.
- 40-2051**  
Effect of grain size distribution on frost heave in fine sand.  
Wang, Z., *National Research Council, Canada. Technical translation*, 1984, No.253, p.205-215, For Chinese original see 39-3697. 5 refs.  
Frost heave, Experimentation, Grain size, Water content, Sands, Clays, Fines, Statistical analysis.
- 40-2052**  
Experimental research on frost heave in various soils at different groundwater levels.  
Wang, S., *National Research Council, Canada. Technical translation*, 1984, No.253, p.217-229, For Chinese original see 39-3700.  
Frost heave, Ground water, Water level, Experimentation, Soil temperature.
- 40-2053**  
Hydrogeological investigation methods and exploration for water in the permafrost region of Qilian Shan.  
Cao, J., *National Research Council, Canada. Technical translation*, 1984, No.253, p.241-253, For Chinese original see 36-359.  
Ground water, Permafrost hydrology, Periglacial processes, Landforms, Ablation, Meltwater, Seasonal variations, Tests.
- 40-2054**  
Principles for compiling large scale ice content maps of permafrost.  
Cheng, G., *National Research Council, Canada. Technical translation*, 1984, No.253, p.255-263, For Chinese original see 36-2465. 5 refs.  
Permafrost preservation, Mapping, Ground ice, Soil water, Settlement (structural), Roads, Cold weather construction, Permafrost hydrology.
- 40-2055**  
Pingos of the Qingshui River Valley on the Qinghai-Tibetan Plateau.  
Wang, S., et al, *National Research Council, Canada. Technical translation*, 1984, No.253, p.265-274, For Chinese original see 36-2466. 3 refs.  
Yao, H.  
Pingos, Origin, Banks (waterways), Lacustrine deposits.
- 40-2056**  
Progress in the study of periglacial landforms in China.  
Cui, Z., *National Research Council, Canada. Technical translation*, 1984, No.253, p.275-294, For Chinese original see 36-2468. 15 refs.  
Periglacial processes, Landforms, Geomorphology, Mountains.
- 40-2057**  
Monitoring changes in total and unfrozen water content in seasonally frozen soil using time domain reflectometry and neutron moderation techniques.  
Hayhoe, H.N., et al, *Water resources research*, Aug. 1985, 21(8), p.1077-1084, 17 refs.  
Bailey, W.G.  
Soil water, Frozen ground temperature, Unfrozen water content, Water content, Seasonal variations, Diurnal variations, Frost penetration, Snow cover effect, Neutron activation analysis, Rain, Soil temperature.
- 40-2058**  
Numerical analysis of heat flow under freezing conditions in groundwater system.  
Suzalec, A., Jr., *Acta geophysica polonica*, 1985, 33(1), p.91-96, With Polish summary. 13 refs.  
Heat transfer, Freezing, Ground water, Phase transformations, Freeze thaw cycles, Mathematical models.
- 40-2059**  
Degradation of in-cloud forward scattering spectrometer probe measurements in the presence of ice particles.  
Gardiner, B.A., et al, *Journal of atmospheric and oceanic technology*, June 1985, 2(2), p.171-180, 9 refs.  
Hallett, J.  
Ice crystal structure, Cloud droplets, Spectroscopy, Unfrozen water content, Supercooled clouds.
- 40-2060**  
Icing wind tunnel tests on the CSIRO liquid water probe.  
King, W.D., et al, *Journal of atmospheric and oceanic technology*, Sep. 1985, 2(3), p.340-352, 11 refs.  
Icing, Wind tunnels, Water flow, Unfrozen water content, Temperature effects, Damping.
- 40-2061**  
Improved filter technique for ice nucleus measurements.  
Shih, C.-F., et al, *Journal of atmospheric and oceanic technology*, Sep. 1985, 2(3), p.412-419, 21 refs.  
Ohtake, T.  
Ice nuclei, Nucleation, Filters, Ice volume, Distribution, Measurement.
- 40-2062**  
Interpretation of geophysical well logs in permafrost.  
Scott, J.H., et al, *Alaska. University. Geophysical Institute. Report*, Dec. 1985, UAG-R (303), 125p., Refs. passim.  
Petersen, J.K., Osterkamp, T.E., Kawasaki, K.  
Permafrost thermal properties, Well logging, Permafrost hydrology, Frozen ground temperature, Ground ice, Soil water, Boreholes, Geophysical surveys, Unfrozen water content, Thermal conductivity, Thermal diffusion.
- 40-2063**  
Ductile-to-brittle transition in steel weldments for Arctic structures.  
Zia-Ebrahimi, F., *U.S. National Bureau of Standards. Report*, Apr. 1985, NBSIR 85-3020, 61p., 24 refs.  
Steel structures, Brittleness, Fracturing, Welding, Temperature effects, Cracking (fracturing), Tensile properties, Microstructure, Loads (forces).
- 40-2064**  
Evaporative cooling.  
Klots, C.E., *Journal of chemical physics*, Dec. 1, 1985, 83(11), p.5854-5860, 21 refs.  
Cooling, Evaporation, Heat transfer, Low temperature tests, Liquids, Molecular structure.
- 40-2065**  
On the positivity of the density in molecular theories of freezing.  
Harrowell, P.R., et al, *Journal of chemical physics*, Dec. 1, 1985, 83(11), p.6058-6059, 8 refs.  
Oxtoby, D.W., Haymet, A.D.J.  
Freezing, Density (mass/volume), Molecular structure, Phase transformations, Analysis (mathematics).
- 40-2066**  
Provenance and sedimentary processes of ice-scored surficial sediments, Labrador Shelf.  
Gilbert, G.R., et al, *Canadian journal of earth sciences*, July 1985, 22(7), p.1066-1079, With French summary. Refs. p.1077-1079.  
Barrie, J.V.  
Ocean bottom, Marine deposits, Ice scoring, Sedimentation, Bottom sediment, Bottom topography, Paleoclimatology, Sediment transport, Icebergs, Canada—Labrador.
- 40-2067**  
Holocene tephrostratigraphy and glacial fluctuations in Waterton Lakes and Glacier national parks, Alberta and Montana.  
Osborn, G., *Canadian journal of earth sciences*, July 1985, 22(7), p.1093-1101, With French summary. 32 refs.  
Glacial deposits, Glacier oscillation, Stratigraphy, Paleoclimatology, Ice flow, Moraines, Chronology, United States—Montana, Canada—Alberta.
- 40-2068**  
Iceguard.  
Horne, T.A., *AOPA pilot*, Nov. 1985, 28(11), p.35-40.  
Aircraft icing, Ice accretion, Ice prevention, Meteorological factors, Propellers, Temperature effects, Hoarfrost, Ice formation, Countermeasures.
- 40-2069**  
Development of quantitative and qualitative microscopic control of concrete quality and durability and of a frost-salt resistance test with rapid cycles.  
Wilk, W., et al, *International Conference on Cement Microscopy*, Albuquerque, New Mexico, Mar. 26-29, 1984. *Proceedings*, Duncanville, Texas, International Cement Microscopy Association, (1984), p.309-329, 20 refs.  
Dobrolubov, G., Romer, B.  
Concrete durability, Concrete strength, Frost resistance, Salting, Microanalysis, Tests, Equipment, Pavements.
- 40-2070**  
Transient thermal strain of concrete: literature review, conditions within specimen and behaviour of individual constituents.  
Khouri, G.A., et al, *Magazine of concrete research*, Sep. 1985, 37(132), p.131-144, 41 refs.  
Grainger, B.N., Sullivan, P.J.E.  
Concrete heating, Thermal properties, Strains, Temperature effects, Thermal stresses, Concrete aggregates, Concrete strength, Temperature distribution.
- 40-2071**  
Soviet glaciological studies in 1984. [Sovetskie glatsiologicheskie issledovaniia v 1984 godu].  
Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanii*, 1985, Vol.53, p.3-11, In Russian.  
Shlykova, O.M.  
Ice sheets, Rock glaciers, Avalanche engineering, Mapping, Glacier ice, Radar echoes, Spaceborne photography, Photography, Glacial hydrology, Subglacial observations, Volcanoes, Ice (construction material), Moorings, Aerial surveys, Topographic surveys, Airports, Helicopters.  
Soviet glaciological research in 1984 is reviewed by region and institution. Velocities of ice sheet movement (0.4 to 0.8 m/year) were determined in four areas of Dome C by the technique of repeated recording of reflections from the ice bed; also water accumulations were located near the bed, beneath 3800 m of ice. Repeated measurements of temperature, diameter and slope were made in a Vostok Station well (2083 m deep) showing -56 and -35 C at 25 and 2083 m depth, respectively. Studies in engineering glaciology, concerning snow-lirn transformations, continued in both Molodezhnaya and Vostok Stations in relation to the construction of heavy aircraft fields. Underwater studies, conducted near Molodezhnaya, included ice-shore morphology, melting intensity of the underwater barrier and experimental construction of moorings by artificial build-up of ice. Ice melting in sea water, the melting-accretion of ice and permafrost distribution beneath the Antarctic sheet were measured and mapped. In addition to these studies by the Arctic and Antarctic Research Institute, glaciological, paleoclimatic and other projects conducted by the Academy's Institute of Geography, and Kazan University are also reported.
- 40-2072**  
Trends in the development of Soviet glaciology (scientific statistics). [Nekotorye tendentsii razvitiia sovetskoi glatsiologii (naukometricheskii analiz)].  
Glazyrin, G.E., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanii*, 1985, Vol.53, p.11-18, In Russian with English summary. 7 refs.  
Pershukova, M.M.  
Research projects, Bibliographies, Theories, Statistical analysis.
- 40-2073**  
Experience in developing an automated classifier for naled formations. [Opyt razrabotki avtomatizirovannogo klassif. ora naledobrazovaniia].  
Grakovich, V.F., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanii*, 1985, Vol.53, p.19-28, In Russian with English summary. 16 refs.  
Koreisha, M.M., Leibman, M.O.  
Naleds, Alimentation, Ice accretion, Measuring instruments, Design.
- 40-2074**  
Reconstructions of ice-formation conditions on a subpolar glacier from core analyses. [Rekonstruktsiia uslovii l'dobrazovaniia na subpoliarnom lednike po rezul'tatam issledovanii kerna].  
Zagorodnov, V.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanii*, 1985, Vol.53, p.36-44, In Russian with English summary. 22 refs.  
Arkhipov, S.M., Macheret, I.U.IA.  
Mountain glaciers, Glacier ice, Ice formation, Drill core analysis, Isotope analysis, Subpolar regions, Hydrothermal processes, Ice structure, Impurities, Paleoclimatology.

- 40-2075**  
Mass balance of the Golubia glacier for 1959/60-1981/82. [Balans massy lednika Golubina za 1959/60-1981/82 gg.]. Alzin, V.B., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.44-45, In Russian with English summary. 18 refs.  
Glacier ice, Glacier mass balance, Glacier alimentation, Glacier ablation, Heat transfer, Snow cover effect.
- 40-2076**  
Regional relations between the total ablation of Pamir-Alai glaciers and absolute altitude. [Regionalnye zavisimosti summarnoi abliatsii lednikov Pamiro-Alaia ot absolutnoi vysoty]. Shestennikov, A.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.55-62, In Russian with English summary. 5 refs.  
Moskalev, I.U.D.  
Mapping, Glacier ice, Glacier ablation, Altitude, Air temperature.
- 40-2077**  
Formation of glacial mudflow centers during glacier degradation in the Elbrus area. [Formirovanie glatsial'nykh selevykh ochagov pri degradatsii lednikov Priel'brus'ia]. Dokukin, M.D., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.62-71, In Russian with English summary. 22 refs.  
Glacier ice, Glacier melting, Glacier oscillation, Glacial hydrology, Mudflows.
- 40-2078**  
Wind effect on snow cover. [Vliianie vetra na snezhnyy pokrov]. Diunin, A.K., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.72-83, In Russian with English summary. 48 refs.  
Wind erosion, Snow evaporation, Snow depth, Ice sublimation, Snow accumulation, Snowdrifts, Blowing snow, Drying, Wind factors.
- 40-2079**  
Statistical evaluation of the limits of snow cover occurrence. [Statisticheskaya otsenka granitsy raspriyraneniia snezhnogo pokrova]. Loktionova, E.M., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.83-90, In Russian with English summary. 5 refs.  
Maps, Air temperature, Snow cover distribution, Snow line, Statistical analysis.
- 40-2080**  
Geographic and mathematical description of the snow cover field in mountains, based on terrestrial surveys, remote airborne sensing and satellite data. [Matematiko-geograficheskoe opisanie polia snezhnogo pokrova v gorakh na osnove nazemnoi, aviadistantionnoi i sputnikovoi informatsii]. Shentsis, I.D., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.91-96, In Russian with English summary. 7 refs.  
Snow depth, Snow water content, Snow water equivalent, Alpine landscapes, Mathematical models, Snow surveys, Snow cover distribution, Route surveys, Remote sensing, Spaceborne photography.
- 40-2081**  
Calculating snow reserves in small mountain basins. [Metodika rascheta snegozapasov v mal'nykh gorn'nykh basseynakh]. Freidlin, V.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.96-99, In Russian with English summary. 6 refs.  
Shnyparkov, A.L.  
River basins, Snow water equivalent, Snow depth, Snow cover distribution, Mathematical models.
- 40-2082**  
Radar method of measuring snow cover thickness. [Radiolokatsionnyi metod izmereniia tolshchiny snezhnogo pokrova]. Karpukhin, V.I., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.99-104, In Russian with English summary. 3 refs.  
Peshkov, A.N.  
Snow physics, Dielectric properties, Snow depth, Snow water equivalent, Radar echoes.
- 40-2083**  
Structure and contents of a data bank on the regime of snow cover and avalanches in mountains. [Struktura i sostav banka rezhimnykh dann'nykh o lavinakh i snezhnom pokrove v gorakh]. Chirkova, A.A., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.104-108, In Russian with English summary. 6 refs.  
Avalanches, Data processing, Snow cover, Mountains, Data transmission.
- 40-2084**  
Mathematical modeling of snow avalanches. [Matematicheskoe modelirovanie vlianiia parametrov lavinnykh ochagov i fizicheskikh svoystv snega na dvizhenie laviny]. Blagoveshchenakii, V.P., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.108-113, In Russian with English summary. 7 refs.  
Eglit, M.E.  
Avalanche engineering, Models, Avalanche formation, Snow physics, Avalanche mechanics, Mathematical models.
- 40-2085**  
Calculating avalanche flow on the basis of a two-dimensional hydraulic model. [Chislennyi raschet lavinnykh potokov na osnove dvumernoi gidravlicheskoi skhemy]. Mironova, E.M., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.113-115, In Russian with English summary. 7 refs.  
Simulation, Avalanche engineering, Turbulence, Avalanche mechanics, Avalanche modeling.
- 40-2086**  
Mathematical model of a powder-snow avalanche. [Issledovanie matematicheskikh modelei pylevoi snezhnoi laviny]. Eglit, M.E., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.116-119, In Russian with English summary. 9 refs.  
Vel'tishchev, N.N.  
Snow slides, Avalanche modeling, Simulation, Avalanche formation, Avalanche mechanics.
- 40-2087**  
Avalanche mapping as a method of studying avalanche activity. [Kartografirovaniye lavin kak metod issledovaniia lavinnoi deiatel'nosti]. Rzhetskii, B.N., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.120-124, In Russian with English summary. 3 refs.  
Snow cover stability, Avalanche triggering, Avalanche engineering, Mapping, Maps, Snow depth, Snow cover structure.
- 40-2088**  
Evolution of natural avalanche complexes in relation to climatic changes. [Evolutsiia lavinnykh prirodnykh kompleksov v svyazi s izmeneniami klimata]. Losev, K.S., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.124-128, In Russian with English summary. 5 refs.  
Glaciation, Climatic changes, Avalanche formation, Altitude, Snow cover distribution, Mountains, Snow cover stability.
- 40-2089**  
Relation of avalanche dynamics in Caucasus to climatic changes in the twentieth century. [Dinamika lavinnoi deiatel'nosti na Kavkaze v svyazi s izmeneniiem klimata v XX stoletii]. Oleinikov, A.D., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.128-133, In Russian with English summary. 13 refs.  
Volodicheva, N.A.  
Glaciation, Snow cover distribution, Snow cover stability, Climatic changes, Alpine landscapes, Avalanche triggering, Avalanche formation.
- 40-2090**  
Analyzing the dynamics of snow conditions and avalanche regime in the Caucasus during the last decades. [Analiz dinamiki snezhnosti i lavinnogo rezhima Kavkaza za poslednie desiatletii]. Kondakova, N.L., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.133-139, In Russian with English summary. 4 refs.  
Troshkina, E.S., Nezhinskii, V.A.  
Alpine landscapes, Snow cover stability, Snow accumulation, Avalanche formation, Glaciation.
- 40-2091**  
Forecasting avalanches associated with heavy snowfall in western Altai. [Ponovyi prognoz lavin svyazannykh s obil'nymi snegopadami dlia Zapadnogo Altai]. Kondrashov, I.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.139-145, In Russian with English summary. 10 refs.  
Popov, V.I.  
Avalanche forecasting, Snowfall, Synoptic meteorology, Meteorological data.
- 40-2092**  
Possibility of using satellite information for developing universal empirical methods for predicting avalanche-hazard periods. [Vozmozhnosti ispol'zovaniia sputnikovoi informatsii dlia postroeniia universal'nykh empiricheskikh metodik prognoza lavinoopasnykh periodov]. Dziuba, V.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.150-155, In Russian with English summary. 10 refs.  
Cherepov, L.V.  
Snowfall, Avalanche triggering, Avalanche forecasting, Snow accumulation, Snow cover stability, Spaceborne photography, Air temperature, Avalanche formation.
- 40-2093**  
Annual stratification of glacier ice in cold firn zones. [Godovoe stratifitsirovanie lednikovykh tolshch v kholodnoi firnovoi zone]. Zagorodnov, V.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.160-163, In Russian with English summary. 7 refs.  
Samolov, O.I.U.  
Mountain glaciers, Glacier ice, Drill core analysis, Firn stratification, Norway—Spitsbergen.
- 40-2094**  
Improvement of actinometric observations on mountain glaciers. [Usovershenstvovaniia aktinometricheskikh nabludenii na gorn'nykh lednikakh]. Moskalenko, I.G., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.164-169, In Russian with English summary. 9 refs.  
Mountain glaciers, Albedo, Solar radiation, Radiation measuring instruments, Glacier surfaces, Heat balance.
- 40-2095**  
Application of a digital gamma-ray density gauge in glaciological studies of Central Antarctica. [O primenении tsifrovogo gamma-plotnomena v praktike glatsiologicheskikh issledovanih v Tsentral'noi Antarktide]. Anshakov, O.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.170-172, In Russian with English summary. 4 refs.  
Emelianov, I.U.N., Chudakov, V.A.  
Gamma irradiation, Measuring instruments, Snow density, Ice density.  
In 1974-79, several types of digital radio-isotope instruments were designed at the Faculty for Nuclear Physics of the Bielorussian University, for measuring densities of light media including ice and snow. One of these instruments was previously used in glaciological measurements by the Moscow State University in some expeditions, but the test described was its first in Central Antarctica. From Jan. 16 to March 14, 1980 a sled-caterpillar vehicle expedition was organized, to start at Mirny Station and proceed to Pionerskaya Station and to Dome C. Glaciological and magnetic studies were performed by associates of the Institute of Geography and the Institute of Terrestrial Magnetism, Academy of Sciences, USSR. Objects investigated, methods used and results obtained are described and briefly discussed.
- 40-2096**  
Influence of temperature and stratigraphic peculiarities of snow cover on the descent of slab avalanches. [Vliianie stratigraficheskikh i temperaturnykh osobennostei snezhnogo pokrova na skhod plastovykh laviny]. Bozhinskii, A.N., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.173-177, In Russian with English summary. 2 refs.  
Snow slides, Snow cover stability, Avalanche formation, Snow stratigraphy, Snow temperature.

40-2097

Ice density variations in the ablation zone of Tuyuksu Glacier. [Variatsii plotnosti l'da oblasti abliatsii lednika Tuyuksu]. Vilesov, E.N., et al, *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.177-181, In Russian with English summary. 7 refs.  
Valdeev, A.E.  
Ice density, Glacier ice, Ablation, Mapping.

40-2098

Formation of surface moraines on mountain glaciers. [Mekhanizmy obrazovaniia poverkhnostnykh moren gornnykh lednikov]. Medvedev, A.S., et al, *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.181-185, In Russian with English summary. 15 refs.  
Barykov, A.A.  
Mountain glaciers, Ice surface, Glacial deposits, Moraines.

40-2099

Lichenometric studies of Tien Shan moraines. [Lichenometriia moren Tian-Shania]. Solomina, O.N., *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.186-191, In Russian with English summary. 8 refs.  
Glacial deposits, Moraines, Age determination, Avalanche deposits, Lichens, Plant physiology.

40-2100

Changes in glaciers of the Baksan River basin during the last centuries according to lichenometric data. [Izmenenie lednikov basseina r. Baksan v poslednie stoletia (po dannym likhenometrii)]. Zolotarev, E.A., et al, *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.192-196, In Russian with English summary. 12 refs.  
Seifova, I.B.  
Mountain glaciers, Glacial deposits, Moraines, Age determination, Lichens.

40-2101

Annotated list of the Soviet literature on glaciology for 1981. [Annotirovannyi spisok sovetskoi literatury po glatsiologii za 1981 g.]. Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanih*, 1985, Vol.53, p.202-236, In Russian with English summary. 630 refs.  
Chernova, L.P., Voevodin, V.A.  
Glaciology, Snow cover, Avalanches, Ice physics, Mudflows, Ice composition, Sea ice, Naleds, Ground ice, Glaciers, Ice sheets, Paleoclimatology, Bibliographies, Atmospheric ice.

The list presented contains all the Soviet literature on glaciology published in 1981 in Russian. It is a continuation of the annotated bibliography for 1956-1980, published in issues 48 and 49 of this periodical. All the papers and books mentioned in the bibliography were analyzed *de visu*. This list also contains some papers published earlier but found after publication of the bibliography for 1956-1980. The citations are divided into 10 sections: basic problems of glaciology, physics and chemistry of snow and ice, atmospheric ice, snow cover, snow avalanches and glacial mudflows, sea ice, river and lacustrine ice, auffs and underground ice, glaciers and ice sheets, paleoglaciology. The list is concluded by a name index. (Auth. mod.)

40-2102

Resolving Alaska's water resources conflicts: proceedings. Dwight, L.P., *Alaska. University. Institute of Water Resources. Report*, Nov. 1985, IWR-108, 204p., Refs. passim. For selected papers see 40-2103 through 40-2108.  
Glacial hydrology, Water reserves, Runoff, Limnology, Glacial lakes, Glacial rivers, Seasonal variations, United States—Alaska.

40-2103

Effects of glacial silt on primary production, through altered light regimes and phosphorus levels in Alaska lakes. Edmundson, J.A., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1985, IWR-108, p.3-19, 27 refs.  
Koenig, J.P.  
Biomass, Suspended sediments, Glacial deposits, Glacial lakes, Meltwater, Limnology, Light effects, Nutrient cycle, Particle size distribution, United States—Alaska.

40-2104

Influences of suspended glacial particles on the macrozooplankton community structure within glacial lakes. Edmundson, J.M., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1985, IWR-108, p.21-35, 13 refs.  
Koenigs, J.P.  
Glacial lakes, Plankton, Suspended sediments, Meltwater, Limnology, Glacier melting, Algae, Biomass, Nutrient cycle, United States—Alaska.

40-2105

Potential for circumventing internal nutrient-recycling in Lucile Lake at Wasilla, Alaska. Woods, P.F., *Alaska. University. Institute of Water Resources. Report*, Nov. 1985, IWR-108, p.39-49, 18 refs.  
Lake water, Ice cover effect, Nutrient cycle, Plankton, Limnology, Bottom sediment, Vegetation, United States—Alaska—Lucile Lake.

40-2106

Glacier runoff in the Upper Susitna and MacLaren River basins, Alaska. Clarke, T.S., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1985, IWR-108, p.99-111, 20 refs.  
Johnson, D., Harrison, W.D.  
Glacial hydrology, Runoff, Glacier mass balance, Ice melting, Firn, Snow melting, United States—Alaska—Susitna River, United States—Alaska—MacLaren River.

40-2107

Growth of Wolverine Glacier, Alaska; determined from surface altitude measurements, 1974 and 1985. Mayo, L.R., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1985, IWR-108, p.113-121, 4 refs.  
March, R.S., Trabandt, D.C.  
Glacier alimentation, Glacier mass balance, Glacier surfaces, Ice growth, Climatic factors, Altitude, Ice volume, United States—Alaska—Wolverine Glacier.

40-2108

Sediment transport in the Susitna River basin, 1982-1983. Lipscomb, S.W., et al, *Alaska. University. Institute of Water Resources. Report*, Nov. 1985, IWR-108, p.191-204, 3 refs.  
Knott, J.M.  
Sediment transport, River flow, Glacial rivers, Ice cover effect, Seasonal variations, Distribution, United States—Alaska—Susitna River.

40-2109

Waves due to a steadily moving source on a floating ice plate. Davys, J.W., et al, *Journal of fluid mechanics*, Sep. 1985, Vol.158, p.269-287, 16 refs.  
Hosking, R.J., Sneyd, A.D.  
Wave propagation, Floating ice, Elastic waves, Ice elasticity, Dynamic loads, Flexural strength, Analysis (mathematics).

40-2110

Properties of hot concrete and its use in winter concreting. Kilpi, E., et al, *Nordic concrete research*, 1982, Vol.1, p.(15)1-(15)11, 2 refs.  
Kukko, H.  
Winter concreting, Concrete heating, Temperature effects, Thermal insulation, Tests.

40-2111

Strength development and frost resistance of concrete at low temperatures. Kivekäs, L., et al, *Nordic concrete research*, 1983, Vol.2, p.137-148, 3 refs.  
Concrete strength, Frost resistance, Winter concreting, Concrete admixtures, Freeze thaw cycles, Air entrainment.

40-2112

Properties of cryogenic concrete. Kronen, H., et al, *Nordic concrete research*, 1983, Vol.2, p.149-165, 12 refs.  
Andersen, J.H.  
Concrete strength, Low temperature tests, Cryogenic structures, Dynamic loads, Temperature effects, Liquefied gases.

40-2113

Prevention of frost-salt action on concrete by use of surface sealants. Vesikari, E., *Alaska. University. Institute of Water Resources. Report*, Nov. 1985, IWR-108, p.205-214, 2 refs.  
Concrete durability, Frost action, Protective coatings, Salting, Bridges, Pavements, Surface properties, United States—Alaska.

40-2114

Behaviour and design of concrete structures under thermal gradients. Jokela, J., *Nordic concrete research*, 1983, Vol.3, p.100-128, 10 refs.  
Concrete structures, Thermal stresses, Reinforced concretes, Heat transfer, Temperature gradients, Temperature effects, Design.

40-2115

Durability of concrete in Arctic offshore structures. Kivekäs, L., *Nordic concrete research*, 1983, Vol.3, p.129-139, 8 refs.  
Concrete durability, Offshore structures, Frost action, Concrete structures, Sea water, Ice solid interface, Offshore drilling, Freeze thaw cycles, Abrasion, Concrete strength, Air entrainment, Ocean waves.

40-2116

Prediction of temperature fields of massive concrete structures during hardening. Pitkanen, P., *Nordic concrete research*, 1983, Vol.3, p.183-190, 4 refs.  
Concrete hardening, Concrete structures, Temperature distribution, Concrete strength, Forecasting, Time factor.

40-2117

Mineral by-products and freeze-thaw resistance of concrete. Virtanen, J., *Nordic concrete research*, 1983, Vol.3, p.191-208, 3 refs.  
Concrete strength, Freeze thaw cycles, Concrete freezing, Mineralogy, Frost action, Air pollution, Damage, Concrete durability.

40-2118

Environmental testing of Dome air-deployable igniter. Final report. Energetex Engineering, *Arctic Petroleum Operators' Association, Calgary, Alberta. Report*, Oct. 15, 1982, APOA 164-1, 20p. + figs.  
Oil spills, Countermeasures.

40-2119

Beaufort Sea coast videotape manual. Woodward-Clyde Consultants, *Arctic Petroleum Operators' Association, Calgary, Alberta. Report*, Oct. 1980, APOA 182-1, 45p.  
Coastal topographic features, Aerial surveys, Beaufort Sea.

40-2120

Amundsen Gulf videotape manual. Woodward-Clyde Consultants, *Arctic Petroleum Operators' Association, Calgary, Alberta. Report*, Feb. 1982, APOA 192-1, 83p.  
Coastal topographic features, Aerial surveys, Canada—Northwest Territories—Amundsen Gulf.

40-2121

Northwest Passage coastal videotape manual. Woodward-Clyde Consultants, *Arctic Petroleum Operators' Association, Calgary, Alberta. Report*, Mar. 1982, APOA 193-1, 112p.  
Aerial surveys, Coastal topographic features, Northwest Passage.

40-2122

Surface oil spill trajectory modelling for Georges and Browns Bank. Lawrence, D.J., et al, *Canadian technical report of hydrography and ocean sciences*, Oct. 1983, No.29, 30p., 26 refs.  
Trites, R.W.  
Oil spills, Ocean currents, Wind factors.

40-2123

Batfish sections near the edge of the Scotian Shelf, 1976-77. Smith, P.C., et al, *Canadian data report of hydrography and ocean sciences*, Apr. 1983, No.1, 159p., 5 refs.  
Champagne, V.E., Bennett, A.S., Herman, A.W.  
Ocean currents, Salinity, Sea water, Water temperature, Canada—Nova Scotia.

40-2124

Avalon Channel—Newfoundland temperature, salinity and sigma-T sections. Lively, R.R., *Canadian technical report of hydrography and ocean sciences*, June 1983, No.24, 65p., 5 refs.  
Ocean currents, Salinity, Sea water, Water temperature, Canada—Newfoundland—Avalon Channel.

- 40-2125**  
Proceedings of the 1982 Grand Banks Current Workshop.  
Benoit, J.R., et al, *Canadian technical report of hydrography and ocean sciences*, Oct. 1983, No.28, 43p., 15 refs.  
Mungall, J.C.H.  
Ocean currents, Icebergs, Offshore structures, Oil spills, Ice scoring, Drift, Canada—Newfoundland—Grand Banks.
- 40-2126**  
Proceedings.  
International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Houghton, Michigan Technological University, [1986], 2 vols., Refs. passim. For selected papers see 40-2127 through 40-2140.  
Runoff, River flow, Ice breakup, Freezeup, Ice jams, Sediment transport, Snow hydrology, Snowmelt, Stream flow, Ice cover effect, Snow cover effect, Meetings.
- 40-2127**  
Summary of methods used by U.S. Geological Survey for the measurement of streamflow under ice cover.  
Cobb, E.D., et al, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.1-9, 1 ref.  
Latkovich, V.J.  
Stream flow, Ice cover effect, River ice, Hydrology, Water reserves, Measurement, Winter, Safety.
- 40-2128**  
Winter discharge measurements and the routine processing of winter stage and discharge records in Norway.  
Pettersson, L.-E., et al, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.10-22.  
Skoftefand, E.  
Stream flow, Ice cover effect, Hydrology, Equipment, Climatic factors, Seasonal variations, Accuracy, Winter, Norway.
- 40-2129**  
Mean ice thickness: the effects of sample size and sampling pattern  
Miller, D.R., et al, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.23-35, 1 ref.  
Edworthy, J.T., Comfort, G., Tudhope, A.  
Ice cover thickness, Ice bottom surface, Surface roughness, Sea ice, Analysis (mathematics), Computer applications.
- 40-2130**  
River ice monitoring.  
Prowse, T.D., International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.36-53, 11 refs.  
River ice, Freezeup, Ice breakup, Ice conditions, Ice mechanics, Ice jams, Monitors, Ice growth.
- 40-2131**  
Real time determination of ice breakup.  
Rachuk, T., et al, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.54-74.  
Rickert, H.  
River ice, Ice breakup, Drift, Measuring instruments.
- 40-2132**  
Sampling suspended-sediment in ice-covered rivers.  
Skinner, J.V., International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.75-88.  
Sediment transport, River flow, Suspended sediments, Ice cover effect, Particle size distribution, Velocity, Equipment.
- 40-2133**  
National Weather Service river forecast system and its application to cold regions.  
Anderson, E.A., International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.89-107, 23 refs.  
River flow, Runoff, Snow cover effect, Ice cover effect, Forecasting, Computer applications, Snowmelt, Rain.
- 40-2134**  
Recent snowpack research studies at NASA/Goddard Space Flight Center.  
Foister, J.L., et al, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.108-128, Refs. p.120-122.  
Hall, D.K., Chang, A.T.C., Shiue, J.C.  
Snow surveys, Remote sensing, Runoff, Snowmelt, Ice cover effect, Snow depth, Snow water equivalent, Microwaves, Snow optics, Radiometry.
- 40-2135**  
Monitoring snowcover properties and processes in a small alpine watershed.  
Marks, D., et al, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.129-145, Refs. p.142-145.  
Kattelmann, R., Dozier, J., Davis, R.  
Snow hydrology, Snow cover distribution, Watersheds, Runoff, Heat transfer, Snow water equivalent, Mountains, Snowmelt, Remote sensing, Heat flux, Solar radiation, Climatic factors.
- 40-2136**  
Experience from a two year urban snowmelt runoff study.  
Westerström, G., International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.146-157, 7 refs.  
Runoff, Snowmelt, Snow cover effect, Icing, Flooding, Models, Degree days, Snow cover distribution.
- 40-2137**  
Problems of discharge measurement for small northern streams during break-up: two case studies.  
Woo, M.-K., et al, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.1, Houghton, Michigan Technological University, [1986], p.158-173, 13 refs.  
Heron, R.  
Stream flow, River ice, Ice breakup, Snow ice interface, Ice water interface, Snow accumulation, Ice jams.
- 40-2138**  
Techniques for measurement of snow and ice on freshwater.  
Adams, W.P., et al, MP 2000, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.2, Houghton, Michigan Technological University, [1986], p.174-222, Refs. p.219-222.  
Prowse, T.D., Bilello, M.A.  
Ice surveys, Snow surveys, Floating ice, Lake ice, River ice, Ice volume, Measurement, Freezeup, Ice breakup, Ice mechanics.  
Information on routine snow and ice survey programs in Finland, Iceland, Norway, Sweden, Canada and the United States is juxtaposed in this paper. Standard methods of ice and snow measurement and practical alternative methods are described with information on reporting procedures and data storage. In each case, points of contact are provided for those seeking data on floating snow and ice. The purpose of the paper is to improve the flow of information between those responsible for winter lake and river programs in circumpolar countries.
- 40-2139**  
Ice metering system and ice chisels.  
Futrell, J.C., II, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.2, Houghton, Michigan Technological University, [1986], p.223-236, 1 ref.  
River flow, Ice cutting, River ice, Ice cover effect, Equipment, Ice cover thickness, Ice mechanics.
- 40-2140**  
Stage, discharge, and ice.  
Santeford, H.S., et al, International Northern Research Basins Workshop/Symposium, 6th, Jan. 26-30, 1986, Proceedings, Vol.2, Houghton, Michigan Technological University, [1986], p.247-272, 8 refs.  
Alger, G.R.  
Stream flow, Ice cover effect, Channels (waterways), Floating ice, Surface roughness, River flow, Lake ice, River ice, Ice cover thickness, Profiles.
- 40-2141**  
Single steel drilling caisson: a new Arctic drilling unit.  
Hippman, A., et al, *Journal of petroleum technology*, Dec. 1985, 37(13), p.2219-2229, 3 refs.  
Kelly, W.  
Caissons, Offshore structures, Offshore drilling, Steel structures, Ice conditions, Ice control, Safety, Design, Logistics, Beaufort Sea.
- 40-2142**  
Atlas of the Beaufort Sea.  
Lissauer, I.M., et al, *U.S. Coast Guard. Report*, 1984, CG-D-33-84, 176p. ADA-149 545.  
Hachmeister, L.E., Morson, B.J.  
Sea ice distribution, Oceanography, Meteorology, Maps, Ice conditions, Drift, Ice edge, Visibility, Precipitation (meteorology), Beaufort Sea.
- 40-2143**  
On snow particles comprising an aggregate.  
Fujiyoshi, Y., et al, *Journal of the atmospheric sciences*, Aug. 1, 1985, 42(15), p.1667-1674, 10 refs.  
Wakahama, G.  
Snow crystals, Precipitation (meteorology), Cloud physics.
- 40-2144**  
Wave statistics for the North Atlantic—1970 to 1982.  
Walker, R.E., *Canadian data report of hydrography and ocean sciences*, Jan. 1984, No.16, 291p., 4 refs.  
Ocean waves, Atlantic Ocean.
- 40-2145**  
HEXOS—Humidity Exchange Over the Sea: scientific plan.  
Smith, S.D., et al, *Canadian technical report of hydrography and ocean sciences*, May 1983, No.21, 47p., 16 refs.  
Katsaros, K.B., Oost, W.A.  
Air water interactions, Evaporation, Humidity.
- 40-2146**  
Analysis of satellite-tracked drifter observations collected in the Grand Banks region.  
Petric, B., et al, *Canadian technical report of hydrography and ocean sciences*, June 1984, No.39, 69p., 9 refs.  
Isenor, A.  
Spaceborne photography, Drift, Ocean currents, Canada—Newfoundland—Grand Banks.
- 40-2147**  
Current meter, meteorological and sea-level observations off Cape Sable, Nova Scotia.  
Lively, R.R., *Canadian technical report of hydrography and ocean sciences*, June 1984, No.40, 494p., 12 refs.  
Ocean currents, Marine meteorology, Oceanography, Sea level, Canada—Nova Scotia—Cape Sable.
- 40-2148**  
Remote sensing of bathymetry: an investigation into the effect of bottom reflectance on passive upwelling spectral irradiance.  
Topliss, B.J., *Canadian technical report of hydrography and ocean sciences*, Oct. 1984, No.42, 21p., 4 refs.  
Upwelling, Bottom topography, Ocean bottom, Canada—Nova Scotia.
- 40-2149**  
Long-term temperature monitoring program 1982, Newfoundland region.  
Dobson, D., et al, *Canadian data report of hydrography and ocean sciences*, July 1983, No.11, 335p.  
Petric, B.  
Water temperature, Ocean bottom, Canada—Newfoundland.
- 40-2150**  
Long-term temperature monitoring program, 1983, Newfoundland region.  
Dobson, D., et al, *Canadian data report of hydrography and ocean sciences*, Apr. 1984, No.21, 411p., 1 ref.  
Petric, B.  
Water temperature, Ocean bottom, Canada—Newfoundland.
- 40-2151**  
Long-term temperature monitoring program 1982, Scotia-Fundy, Gulf regions.  
Dobson, D., et al, *Canadian data report of hydrography and ocean sciences*, July 1983, No.10, 384p.  
Petric, B.  
Water temperature, Ocean bottom, Canada.
- 40-2152**  
Long-term temperature monitoring program, 1983, Scotia-Fundy, Gulf regions.  
Dobson, D., et al, *Canadian data report of hydrography and ocean sciences*, Apr. 1984, No.22, 406p.  
Petric, B.  
Water temperature, Ocean bottom, Canada.
- 40-2153**  
Acclimation of sea-ice microalgae to freezing temperature.  
Rochet, D., et al, *Marine ecology progress series*, July 1985, 24(1/2), p.167-191, 21 refs.  
Legendre, L., Demers, S.  
Sea ice, Algae, Microbiology, Canada—Hudson Bay.

- 40-2154**  
Glaciological investigations in central Tien Shan. (Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane). Dikikh, A.N., ed, Frunze, Ilim, 1984, 144p., In Russian. For selected papers see 40-2155 through 40-2163. Refs. passim.  
Moraines, Ice physics, Ice dating, Glacier ice, Glacier surfaces, Albedo, Glacier ablation, Glacier alimentation, Mudflows, Snow cover distribution, Glacial lakes, Radiation absorption, Glacier mass balance, Ice temperature.
- 40-2155**  
Ablation regime of complex valley glaciers in central Tien Shan. (Rezhim abliatsii slozhno-dolinnnykh lednikov Tsentral'nogo Tian'-Shania). Bakov, E.K., et al, Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane (Glaciological investigations in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1984, p.3-16, In Russian. 16 refs. Dikikh, A.N.  
Snow line, Mountain glaciers, River valleys, Snow accumulation, Glacier alimentation, Glacier ablation, Glacier mass balance.
- 40-2156**  
Determination of mean magnitude of absorbed radiation for a glacier surface. (Opredelenie srednikh velichin pogloshchenoi radiatsii dlia poverkhnosti lednika). Dikikh, A.N., et al, Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane (Glaciological investigations in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1984, p.17-28. Dikikh, L.L.  
Pollution, Mountain glaciers, Radiation absorption, Glacier surfaces, Ice surface, Snow cover effect, Solar radiation.
- 40-2157**  
Snow cover distribution on glaciers of central Tien Shan and evaluation of its contribution to total glacier runoff. (Raspredelenie snezhnogo pokrova na lednikakh tsentral'nogo Tian'-Shania i otsenka ego doli v lednikovom stoke). Bakov, E.K., Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane (Glaciological investigations in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1984, p.29-40, In Russian. 4 refs.  
Glacier ablation, Mountain glaciers, Snow cover distribution, Snow water equivalent, Runoff, Snow melting.
- 40-2158**  
Water-ice balance of Sary-Bet glacier in 1979-1981. (Vodno-ledovyi balans lednika Sary-Bet v 1979-1981 gg.). Bakov, E.K., et al, Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane (Glaciological investigations in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1984, p.40-47, In Russian. 8 refs. Osmonbekov, B., Safonov, V.I.  
Glacier ice, Water balance, Mountain glaciers, Mass balance, Analysis (mathematics).
- 40-2159**  
Fernaui moraine of Kara-Batkak glacier. (K voprosu o morene Fernau lednika Kara-Batkak). Gerasimov, I.U.V., Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane (Glaciological investigations in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1984, p.73-83, In Russian. 14 refs.  
Mountain glaciers, Glacier ablation, Glacial deposits, Glacial erosion, Moraines, Glacier ice, Ground ice.
- 40-2160**  
Applying pedology to dating mountain-glacier moraines. (Ispol'zovanie pochv dlia datirovki moren gornyykh lednikov). Pomortsev, O.A., Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane (Glaciological investigations in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1984, p.100-106, In Russian. 9 refs.  
Glacial deposits, Glacial erosion, Moraines, Soil dating, Ice formation, Ice dating.
- 40-2161**  
Application of lichenometry to glacial geomorphology. (Primenenie likhenometrii v gliatsiogeomorfologii). Koshov, M.K., Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane (Glaciological investigations in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1984, p.107-124, In Russian. 14 refs.  
Lichens, Climatic changes, Plant physiology, Environmental impact, Avalanches, Mudflows, Moraines, Long range forecasting, Soil dating, Vegetation factors.
- 40-2162**  
Leveling some points of the moraine damming a glacial lake in the Kara-Batkak area. (O nivelirovani tochev moreny podpruzhivaiushchei prilednikovoe ozero v urochishche Kara-Batkak). Kuz'michenok, V.A., Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane (Glaciological investigations in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1984, p.124-129, In Russian. 6 refs.  
Moraines, Glacial lakes, Ice dams, Topographic surveys, Ground ice, Data processing.
- 40-2163**  
Topographic surveys of a glacial lake bottom and data processing. (K voprosu ob obrabotke materialov topograficheskikh s'emoek dna gliatsial'nykh ozer). Kuz'michenok, V.A., Gliatsiologicheskie issledovaniia v Tsentral'nom Tian'-Shane (Glaciological investigations in central Tien Shan) edited by A.N. Dikikh, Frunze, Ilim, 1984, p.130-137, In Russian. 8 refs.  
Bottom topography, Glacial lakes, Topographic surveys, Data processing, Mapping, Charts.
- 40-2164**  
Artificial avalanche-triggering systems. (I sistemi di distacco artificiale delle valanghe). Balzaretto, P., Venice, Regione Veneto, Dipartimento foreste, 1985, 64p., In Italian. 14 refs.  
Avalanche triggering, Avalanche formation, Snow mechanics, Explosives, Blasting, Damage, Countermeasures.
- 40-2165**  
Hydrological simulation of the Cordevole watershed. (Simulazione idrologica del bacino del cordevole). Ca Zorzi, F., et al, Venice, Regione del Veneto, Dipartimento foreste, 1984, 160p. + append., In Italian. 16 refs.  
Dalla Fontana, G., Fattorelli, S.  
Snow hydrology, Runoff, Snowmelt, Watersheds, Precipitation (meteorology), Models, Hydrology.
- 40-2166**  
Energy saving heating of concrete. (Energiian talou-dellinen kaytto betonin lammityksessaj). Kilpi, E., et al, Finland. Technical Research Centre. Research reports, 1985, No.374, 83p., In Finnish with English summary. 19 refs.  
Kukko, H.  
Concrete heating, Winter concreting, Concrete hardening, Thermal insulation, Concrete strength, Finland.
- 40-2167**  
Study of the use of icing monitors for winter road service; interim report. (Untersuchung des Nutzens von Glatteismeldegeräten im Hinblick auf den Betrieb des Strassenwinterdienstes; Zwischenbericht). Seliger, R., Cologne, Bundesanstalt für Strassenwesen, Aug. 1981, 28p., In German.  
Road icing, Road maintenance, Winter maintenance, Monitors.
- 40-2168**  
M.V. Arctic Seminar 1985: planning and assessment report. Peirce, T.H., et al, Canada. Department of Transport. Report, 1985, TP 7135E, var.p., With French summary. Gillies, T.K., Peirce, J.C.  
Icebreakers, Ice navigation, Marine transportation, Ice conditions, Safety, Meetings.
- 40-2169**  
Phase transition of ice Ic with Bjerrum defects. Minagawa, I., Physical Society of Japan. Journal, Nov. 1985, 54(11), p.4221-4223, 10 refs.  
Cubic ice, Phase transformations, Ice crystal structure, Molecular structure, Analysis (mathematics).
- 40-2170**  
Arctic rig developed for medium depths. Offshore, Nov. 1985, 45, p.77.  
Offshore structures, Offshore drilling, Artificial islands, Ice (construction material), Platforms.
- 40-2171**  
Radio echo sounding bibliography, 1961-1980. Drewry, D.J., Cambridge, Scott Polar Research Institute, 1980, c15p.  
Radio echo soundings, Glacier surveys, Bibliographies, Ice sheets, Ice shelves, Electromagnetic prospecting, Ice electrical properties, Ice mechanics, Moraines, Ice deformation.
- 40-2172**  
Occurrence, abundance, and composition of ice-rafted debris in sediments from Deep Sea Drilling Project sites 579 and 580, northwest Pacific. Kriasek, L.A., et al, Initial reports of the Deep Sea Drilling Project, Nov. 1985, Vol.86, p.647-655, 11 refs.  
Morley, J.J., Lofland, D.K.  
Sediment transport, Ice scouring, Paleoclimatology, Bottom sediment, Ice mechanics, Ocean bottom, Geochronology, Pleistocene, Pacific Ocean.
- 40-2173**  
Sea ice off the Icelandic coast, Oct. 1980-Sep. 1983. (Hafis vid strendur Íslands, október 1980-september 1983). Reykjavik, Iceland, 1985, 88p., In Icelandic with English summary.  
Sea ice distribution, Ice conditions, Ice edge, Icebergs, Ice floes, Seasonal variations, Iceland.
- 40-2174**  
Evaluation of the technology for detecting small objects at sea surface sensor platforms. Dawe, B.R., et al, Canada. Department of Transportation. Report, Dec. 1985, TP 6818E, 126p. + figs., 35 refs.  
Finlayson, D.J., Stacey, R.A.  
Sea ice distribution, Remote sensing, Icebergs, Ice edge, Detection, Surface roughness, Sea water, Rescue operations, Ocean waves, Wind velocity.
- 40-2175**  
Control and automation of gas transportation objects. (Sredstva kontrolia i avtomatizatsii ob'ektov transporta gaza). Plotnikov, V.M., et al, Leningrad, Nedra, 1985, 217p. (Pertinent p.190-216). In Russian with abridged English table of contents enclosed. 16 refs.  
Podreshetnikov, V.A., Goncharov, V.U.  
Natural gas, Gas pipelines, Permafrost beneath structures, Cold weather operation, Transportation.
- 40-2176**  
Strength and deformations of heavy concretes under plane stress, allowing for temperature effects. (Prochnost' i deformatsii tiazhelogo betona v usloviakh ploskogo napriazhennogo sostoiianiia s ucheto temperaturnykh vozdeistvii). Krichevskii, A.P., Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura, 1985, No.11, p.6-11, In Russian. 6 refs.  
Concrete structures, Concrete freezing, Concrete strength, Stress strain diagrams, Design.
- 40-2177**  
Algorithm for calculating ice accretion and ice temperature beneath snow cover. (Algoritim rascheta narastaniia tolshchiny i temperatury l'da pod snegom). Raspopin, G.A., et al, Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura, 1985, No.11, p.92-97, In Russian. 5 refs.  
Vorob'eva, A.P.  
Ice temperature, Ice cover thickness, Ice accretion, Snow cover effect, Computer programs.
- 40-2178**  
Effective means of power supply for BAM construction. (Effektivnye sredstva energosnabzheniia na stroitel'stve BAMa). Talts, V.G., Mekhanizatsiia stroitel'stva, Jan. 1986, No.1, p.16-17, In Russian.  
Helicopters, Electric power, Construction equipment, Construction materials, Baykal Amur railroad, Permafrost beneath structures, Transportation.
- 40-2179**  
Estimating frost resistance of shotcrete used in tunnels. (Prognozirovaniie morozostoi'kosti nabryzgbetona dlia tonnel'nykh konstrukttsii). Shekin, A.E., et al, Transportnoe stroitel'stvo, Jan. 1986, No.1, p.19-20, In Russian. 3 refs.  
Dobshits, L.M., Smolianskii, V.M., Girenko, I.V.  
Tunnels, Linings, Shotcrete, Frost resistance, Building codes.
- 40-2180**  
To clean slide-ditches. (Dlia ochistki kiuvetov). Divin, O.A., et al, Transportnoe stroitel'stvo, Jan. 1986, No.1, p.29-31, In Russian.  
Stramov, V.M., Kuz'menko, V.V.  
Roads, Snow trenches, Winter maintenance, Snow removal, Drainage, Equipment, Mountains.

- 40-2181**  
Resources of technical equipment utilization. [Rezervy effektivnosti ispol'zovaniia tekhniki], Shpil'er, E.D., *Transportnoe stroitel'stvo*, Jan. 1986, No.1, p.51-55, In Russian.  
Construction equipment, Winter maintenance, Indicating instruments, Cold weather tests.
- 40-2182**  
Formation of the Ust'-Khanalskiy head water level. [O formirovani urovnia verkhnego b'efa Ust'-Khanalskoi GES], Onikienko, T.S., *Energeticheskoe stroitel'stvo*, Dec. 1985, No.12, p.37-40, In Russian. 3 refs.  
Forest tundra, Permafrost beneath lakes, Permafrost beneath structures, Swamps, Electric power, Permafrost transformation.
- 40-2183**  
Quality of concrete spillway surfaces. [O kachestve betonnykh vodostivnykh poverkhnostei], Dneprovskii, A.V., *Energeticheskoe stroitel'stvo*, Dec. 1985, No.12, p.40-43, In Russian. 6 refs.  
Spillways, Hydraulic structures, Dams, Electric power, Concrete structures, Surface roughness.
- 40-2184**  
Problems in construction of sub-stations in northern regions. [Nekotorye voprosy stroitel'stva podstantsii v severnykh raiionakh], Ievlev, V.V., et al, *Energeticheskoe stroitel'stvo*, Dec. 1985, No.12, p.43-44, In Russian.  
Ivonin, V.A.  
Electric power, Concrete structures, Prefabrication, Permafrost beneath structures, Construction materials, Thermal insulation.
- 40-2185**  
Brittle failure of steel power-line supports and the improvement of their frost resistance. [Khrupkoe razrushenie elementov stal'nykh opor VL i povyshenie ikh khladostoiokosti], Sil'vestrov, A.V., et al, *Energeticheskoe stroitel'stvo*, Dec. 1985, No.12, p.65-67, In Russian. 7 refs.  
Mironov, S.V.  
Brittleness, Steel structures, Power line supports, Permafrost beneath structures, Frost resistance.
- 40-2186**  
Ecology and phytocenology of moss synusia in forest soils of the Mayskaya basin (the BAM zone). [Ekologiya i fitotsenologiya nekotorykh sinuzii mkhov v napochvennom pokrove lesov Malskoi kotloviny (zona BAMa)], Otniukova, T.N., *Botanicheskii zhurnal*, 1985, 70(11), p.1465-1477, In Russian with English summary. Refs. p.1476-1477.  
Forest soils, Cryogenic soils, Mosses, Vegetation patterns, Plant ecology, Ecosystems, Baykal Amur railroad.
- 40-2187**  
Groups of associated species in Alpine meadow communities of the Kazbegi region (Central Caucasus). [Gruppy sopriazhennykh vidov v rastitel'nykh soobshchestvakh al'piskikh lugov raiiona Kazbegi (Tsentral'nyi Kavkaz)], Bedoshevili, D.O., *Botanicheskii zhurnal*, 1985, 70(11), p.1523-1528, In Russian. 19 refs.  
Ecosystems, Alpine landscapes, Meadow soils, Cryogenic soils, Classifications, Plant ecology.
- 40-2188**  
Reports of planetary geology program—1983. Holt, H.E., comp. *U.S. National Aeronautics and Space Administration. Technical memorandum*, 1984, NASA TM 86246, 350p. N84-23431.  
Extraterrestrial ice, Frozen ground, Permafrost, Patterned ground, Research projects, Mars (planet), Antarctica—Victoria Land.  
This is a compilation of abstracts of reports from Principal Investigators of NASA's Office of Space Science and Applications, Solar System Exploration Division, Planetary Geology Program. It is intended to provide a document which succinctly summarizes work conducted in this program. Significant accomplishments within the authors' grants or contracts are given. Abstracts pertinent to the CRREL Bibliography begin on p.3, 20, 171, 185, 188, 205, 209, 212, and 215; those pertinent to the Antarctic Bibliography begin on p.216, 219, 231, and 253. They compare cryogenic materials on Mars and icy satellites with similar environments on Earth.
- 40-2189**  
Mountain glaciers. [Ledniki v gorakh], Serebriannyi, L.R., et al, Moscow, Nauka, 1985, 157p., In Russian with English table of contents enclosed. Refs. p.153-156.  
Orlov, A.V.  
Glacial deposits, Mountain glaciers, Moraines, Glaciers, Ice cracks, Ground ice, Glacial erosion, Glacial hydrology, Geomorphology.
- 40-2190**  
Engineering method of predicting and controlling sizes of thawing halos around mining excavations in permafrost areas. [Inzhenernyi metod prognozirovaniia i regulirovaniia razmerov areolov protaivaniia vokrug gornykh vyrabotok oblasti mnogoletnel merzloty], Izakson, V.IU., et al, *Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh*, Sep.-Oct. 1985, No.5, p.33-38, In Russian. 6 refs.  
Petrov, E.E.  
Mines (excavations), Frozen rock temperature, Permafrost thermal properties, Timbering, Thaw weakening, Design, Stresses, Mine shafts.
- 40-2191**  
Forecasting heavy snow at Wenatchee, Washington. Holcomb, J.W., *U.S. National Oceanic and Atmospheric Administration. Technical memorandum*, Dec. 1981, NWS-WR 72, 12p., PB82-177783, 5 refs.  
Snowfall, Weather forecasting.
- 40-2192**  
Drifting ice as a mechanical factor in cleaning and pollution of the hydrosphere. [O dreifuishchikh l'dakh kak mekhanicheskom faktore ochishcheniia i zagriazneniia gidrosfery], Izmailov, V.V., *Geograficheskoe obshchestvo SSSR. Izvestiia*, May-June 1984, 116(3), p.231-237, In Russian. 6 refs.  
Petroleum products, Sea ice distribution, Drift, Water pollution, Oil spills, Adsorption, Ice structure, Porosity, Transportation.
- 40-2193**  
Experience in highly accurate leveling from ice. [Opyt vysokotochnogo nivelirovaniia po l'du], Kabatskii, G.I., *Geodeziia i kartografiia*, June 1985, No.6, p.27-29, In Russian. 4 refs.  
Topographic surveys, Leveling, Icebound rivers.
- 40-2194**  
Stability of wall-type bench marks in permafrost. [Issledovaniia stabil'nosti stennykh geodezicheskikh znakov v raiionakh mnogoletnel merzloty], Bogdanov, B.G., *Geodeziia i kartografiia*, July 1985, No.7, p.16-19, In Russian. 4 refs.  
Permafrost, Bench marks, Stability.
- 40-2195**  
How to prevent hydrate formation in the evaporation pipes of cooling stations. [Kak predotvratit' gidratobrazovanie v trubkakh isparitel' kholodil'nykh stantsii], Borshch, A.T., et al, *Gazovaya promyshlennost'*, Nov. 1985, No.11, p.24, In Russian.  
Galitskii, V.V., Dem'ianenko, I.U.I.  
Hydrates, Gas pipelines, Natural gas.
- 40-2196**  
Formation of hydrate plugs in gas pipelines. [Mekhanizm obrazovaniia gidratnykh probok v gazoprovodakh], Malysheva, G.N., et al, *Gazovaya promyshlennost'*, Nov. 1985, No.11, p.25, In Russian.  
Malyshev, A.G.  
Gas pipelines, Hydrates, Natural gas, Analysis (mathematics), Cold weather operation.
- 40-2197**  
Diagnosing thermal regimes of gas mains. [Diagnostirovanie teplovykh rezhimov magistral'nykh gazoprovodov], Shpotakovskii, M.M., *Gazovaya promyshlennost'*, Nov. 1985, No.11, p.28-29, In Russian.  
Gas pipelines, Natural gas, Thermal regime, Permafrost beneath structures.
- 40-2198**  
Thermosyphon devices. Hegdal, L., Alaska. *Department of Transportation and Public Facilities. Research notes*, Feb. 1986, 5(8), 2p.  
Artificial freezing, Soil freezing, Soil stabilization, Refrigeration, Equipment, Engineering, Foundations, Design.
- 40-2199**  
Measurements of the volumetric mass of snow. [Les mesures de la masse volumique de la neige], Danielou, Y., et al, *France. Direction de la Météorologie nationale. Etablissement d'études et de recherches météorologiques. Note de travail*, Dec. 1985, No.138, 19p., In French.  
Pahaut, E.  
Snow surveys, Snow accumulation, Snow mechanics, Snow density, Meteorological data, Measuring instruments.
- 40-2200**  
Nearshore marine geologic investigations, Point Barrow to Skull Cliff, northwest Chukchi Sea. Phillips, R.L., et al, *U.S. Geological Survey. Open-file report*, 1985, No.85-50, 22p., 13 refs.  
Reiss, T.E.  
Marine geology, Ice scoring, Ocean bottom, Bottom topography, Quaternary deposits, Ocean currents, Chukchi Sea.
- 40-2201**  
Ramp de-icing. Society of Automotive Engineers. Committee AGE-2, *Society of Automotive Engineers. Aerospace information report*, Jan. 1975, AIR 1335, 16p.  
Aircraft icing, Ice prevention, Snow removal, Ice removal, Ice accretion, Snowfall, Safety, Precipitation (meteorology).
- 40-2202**  
Positronium formation and diffusion in crystalline and amorphous ice using a variable-energy positron beam. Eldrup, M., et al, *Physical review B Condensed matter*, Dec. 1, 1985, 32(11), p.7048-7064, 64 refs.  
Vehanen, A., Schultz, P.J., Lynn, K.G.  
Ice physics, Ice crystal structure, Ions, Molecular structure, Temperature effects.
- 40-2203**  
Crystallographic orientation of a recrystallized grain grown in a strained single crystal of ice. Ohtomo, M., et al, *Philosophical magazine*, Sep. 1985, 52(3), p.419-429, 19 refs.  
Wakahama, G.  
Recrystallization, Ice crystal growth, Plastic deformation, Stresses, Strains, Grain size, X ray diffraction.
- 40-2204**  
Brillouin scattering on H<sub>2</sub>O above 70 GPa: transition to symmetric ice (ice X). Polian, A., et al, *Solid state physics under pressure: recent advance with Anvil devices*. Edited by S. Minomura, Tokyo, KTK Scientific Publishers, 1985, p.93-98, 13 refs.  
Besson, J.M., Grimsditch, M.  
High pressure ice, Ice physics, Phase transformations, Light scattering, Heavy water, Ice elasticity, Cubic ice.
- 40-2205**  
Retrieval of worldwide precipitation and allied parameters from satellite microwave observations. Rao, M.S.V., *Advances in geophysics*, 1984, Vol.26, p.237-336, Refs. p.331-336.  
Sea ice distribution, Ice conditions, Remote sensing, Precipitation (meteorology), Mapping, Microwaves, Thermal radiation.
- 40-2206**  
Climate sensitivity. Dickinson, R.E., *Advances in geophysics*, 1985, Vol.28, Issues in atmospheric and oceanic modeling. Pt. A: Climatic dynamics. Edited by S. Manabe, p.99-129, Refs. p.125-129.  
Ice optics, Albedo, Sea ice, Heat balance, Climatic factors, Carbon dioxide, Paleoclimatology.
- 40-2207**  
Representing seasonally frozen soil with the CREAMS model. Knisel, W.G., et al, *American Society of Agricultural Engineers. Transactions*, Sep.-Oct. 1985, 28(5), p.1487-1493, 37 refs.  
Moffitt, D.C., Dumper, T.A.  
Frozen ground, Runoff, Snowmelt, Soil water, Watersheds, Evapotranspiration, Seasonal variations, Solar radiation, Air temperature, Models.
- 40-2208**  
Modeling soil frost depth under three tillage systems. Benoit, G.R., et al, *American Society of Agricultural Engineers. Transactions*, Sep.-Oct. 1985, 28(5), p.1499-1505, 26 refs.  
Mostaghimi, S.  
Soil freezing, Frost penetration, Heat transfer, Thermal conductivity, Soil water, Mathematical models, Heat capacity, Snow depth, Thaw depth, Hydraulics, Agriculture.
- 40-2209**  
Geologic factor in glacier regimes of western Tien Shan and Pamirs. [Geologicheskii faktor v rezhime lednikov Zapadnogo Tian'-Shania i Pamirai], Borisov, O.M., ed. Tashkent, Fan, 1985, 108p., In Russian with English table of contents enclosed. 174 refs.  
Moraines, Glacial erosion, Hydrothermal processes, Glacier ice, Ice composition, Glacial hydrology, Ice formation, Geomorphology, Mountain glaciers, Meteorological factors, Permafrost distribution.

## 40-2210

Effects of compressive and tensile mechanical stresses on thermal deformation of concrete and reinforced concrete at low subzero temperatures. (Vliianie szhimaiushchikh i raztiazivaiushchikh mekhanicheskikh napriazhenii na temperaturnye deformatsii betona i zhelezobetona pri nizkikh otritsatel'nykh temperaturakh). Gorchakov, G.I., et al, Russia. *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.10, p.16-20, In Russian. 5 refs. Guzeev, E.A., Seflanov, L.A.

Concrete strength, Reinforced concretes, Concrete freezing, Deformation, Mechanical tests, Tensile properties, Compressive properties.

## 40-2211

Effectiveness of using portland cements with and without gypsum in winter concreting. (Effektivnost' primeneniia riadovogo i bezgipsovogo portland-tsementov pri zimnem betonirovani). Shpynova, L.G., et al, Russia. *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.10, p.65-69, In Russian. 5 refs. Sanitskii, M.A., Shilko, O.I.A., Kostuk, P.I.

Winter concreting, Concrete aggregates, Cement, Frost resistance, Concrete admixtures, Cement admixtures.

## 40-2212

Operation of outdoor distribution systems of the Chita Heat and Electric power plant, under frost heave conditions. (Eksploatatsiia otkrytogo raspredelitel'nogo ustroistva Chitinskoi TETS-1 v usloviakh moroznogo pucheniia gruntov). Vlasov, N.V., et al, Russia. *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.10, p.133-135, In Russian. 1 ref. Zhelezniak, I.I., Zhuravlev, N.A., Babello, V.A.

Frost heave, Electric power, Concrete structures, Reinforced concretes, Foundations, Permafrost beneath structures.

## 40-2213

Subsurface, remote, ultrashort-wave radar sensing of sea ice and earth covers. (Radiolokatsionnoe podpoverkhnostnoe zondirovanie morskogo l'da i zemnykh pokrovov na ul'trakovykh volnakh). Finkel'shtein, M.I., *Akademiia nauk SSSR. Vestnik*, 1984, No.9, p.20-28, In Russian.

Airborne radar, Sea ice distribution, Ice cover thickness, Remote sensing, Ice structure, Unfrozen water content, Ice composition, Salinity.

## 40-2214

Regular forum of geocryologists. (Ocherednoi forum geokriologov). Mel'nikov, P.I., et al, *Akademiia nauk SSSR. Vestnik*, 1984, No.10, p.102-104, In Russian.

Grave, N.A.

Meetings, Geocryology, Permafrost distribution, Permafrost hydrology, Environmental protection, Remote sensing, Subsea permafrost.

## 40-2215

Polar universal supply ships. (Universal'nye sudasnbazhenty dlia Severa). Vladimirtsev, V.A., et al, *Sudostroenie*, Jan. 1986, No.1, p.3-6, In Russian.

Korolev, V.V.

Ships, Ice navigation, Cargo, Design.

## 40-2216

Brash ice behaviour in frequented ship channels. Sandkvist, J., Luleå, Sweden. *University. Water Resources Engineering. Report. Series A*, 1986, No.139, var.p. Includes 4 reports. Refs. passim.

Ice navigation, Ice breaking, Icebreakers, Ice cover strength, Ice solid interface, Ice conditions, Channels (waterways), Freezing, Stefan problem, Ice cover thickness, Floating ice, Brash ice, Sweden—Luleå.

## 40-2217

Modeling sea-ice dynamics. Hibler, W.D., III, *Advances in geophysics*, 1985, Vol.28, MP 2001, Issues in atmospheric and oceanic modeling. Pt. A: Climate dynamics. Edited by S. Manabe, p.549-579, 44 refs.

Ice mechanics, Sea ice distribution, Ice models, Drift, Ice cover thickness, Ice cover strength, Freeze thaw cycles, Rheology, Plastic flow, Ice water interface, Air water interactions, Seasonal variations.

## 40-2218

Observations of the polar regions from satellites using active and passive microwave techniques. Swift, C.T., et al, *Advances in geophysics*, 1985, Vol.27, Satellite oceanic remote sensing, edited by B. Saltzman, p.335-392, Refs. p.390-392.

DLC QC801.A283 Vol.27, 1985.

Sea ice, Ocean waves, Height finding, Wind velocity, Spacecraft, Microwaves.

An analysis is presented of selected key parts of the full Seasat data set covering both the Arctic and Antarctic. Most of the essential cryospheric capabilities of the microwave instrument package were accomplished. Measurements, to a higher degree of accuracy than was hitherto possible were made of sea ice kinematics; active and passive microwave signatures discriminating between sea ice types, ice sheet topographic mapping by radar altimetry; and wave heights and surface wind speeds at the ice edge, also by radar altimetry.

## 40-2219

Estimating urban snowmelt runoff by the temperature index approach. Westerström, G., Luleå, Sweden. *University. Water Resources Engineering. Report. Series A*, 1986, WREL, No.140, 25p., Includes 3 papers of G. Westerström. 14 refs.

Runoff, Snowmelt, Snow water equivalent, Degree days, Temperature effects, Latent heat, Solar radiation, Models, Diurnal variations, Snow cover distribution.

## 40-2220

Hydrological and hydrotechnical problems of mudflow countermeasures. (Gidrologicheskie i gidrotekhnicheskie problemy protivoselevykh meropriiati). Kherkheulidze, G.I., ed, *Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.83, 136p., In Russian. For selected papers see 40-2221 through 40-2227. Refs. passim.

Glacial hydrology, Ice dams, Mudflows, Models, Research projects.

## 40-2221

Studies of glacial mudflows in the Transcaucasian scientific research institute and trends in their future development. (Issledovaniia selevykh potokov Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy, 1984, Vol.83, p.6-8, In Russian.

Mudflows, Glacial hydrology, Glacial lakes, Ice dams, Models, Research projects.

## 40-2222

Mudflow phenomena and mudflow danger areas in the Georgian SSR. (Selevyie iavleniia i seleopasnye raiony Gruzinskoi SSR). Kherkheulidze, G.I., et al, *Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.83, p.10-27, In Russian. 8 refs.

Tsereteli, E.D., Tatoshvili, S.G.

Alpine landscapes, Alpine glaciation, Slope processes, Glacial lakes, Glacial hydrology, Mudflows, Charts.

## 40-2223

Determining maximum mudflow-runoff parameters from elements of mudflow-forming water runoff. (Opredeleniie parametrov maksimal'nogo selevogo stoka po elementam seleformiruiushchego vodnogo stoka). Kherkheulidze, G.I., *Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.83, p.47-60, In Russian. 14 refs.

Slope processes, Soil erosion, Clays, Mudflows, River basins, Mathematical models.

## 40-2224

Determining flow velocities of flood- and mudflow waters when designing mudflow-retaining and mudflow-passing structures. (K opredeleniiu skorostei techeniia pavodkov i selevykh potokov pri proektirovani selezashchitnykh i selepropusknykh sooruzhenii). Rukhadze, N.V., *Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.83, p.60-66, In Russian. 12 refs.

Mudflows, Hydraulic structures, Design, Slope processes, Countermeasures.

## 40-2225

Classification of design schemes for mudflow effect on obstacles. (Problema sistemizatsii raschetnykh skhem vozdeistviia selevykh potokov na pregrady). Kherkheulidze, G.I., *Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.83, p.67-77, In Russian. 12 refs.

Mudflows, Slope processes, Countermeasures, Design.

## 40-2226

Mudflow loads and methods of their determination. (Selevyie nagruzki i sposoby ikh opredeleniia). Kherkheulidze, G.I., *Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.83, p.77-112, In Russian. 25 refs.

Mudflows, Flow rate, Surface properties, Friction, Countermeasures, Design.

## 40-2227

Results of construction and operation of an experimental through-type mudflow-catching system (ZakNII) on the Durudzha River. (Nekotorye rezul'taty opyta postroiki ekspluatatsii eksperimental'nogo skvoznoogo seleulovitel'skoi sistemy ZakNII na r. Durudzh). Burduli, N.S., et al, *Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.83, p.112-124, In Russian. 10 refs.

Kiziriia, G.V., Kherkheulidze, G.I.

Mudflows, Concrete structures, Reinforced concretes, Countermeasures.

## 40-2228

Cloud modification. (Aktivnye vozdeistviia na oblaky). Sergin, I.U.A., ed, *Tsentral'naia aerologicheskaiia observatoriia. Trudy*, 1984, Vol.156, 136p., In Russian. For selected papers see 40-2229 through 40-2234. Refs. passim.

Cloud physics, Supercooled fog, Fog dispersal, Airports, Weather modification, Supercooled fog, Cloud seeding, Aerosols, Nucleation, Ice nuclei, Air pollution, Industrial wastes.

## 40-2229

Development of a ground-based method for dissipating supercooled fog at airports. (Razrabotka nazemnogo metoda iskusstvennogo rasseianiia pereokhlazhdennykh tumanov na aerodromakh). Zemskov, A.N., et al, *Tsentral'naia aerologicheskaiia observatoriia. Trudy*, 1984, Vol.156, p.3-11, In Russian with English summary. 12 refs.

Zhevaldina, T.I., Krasnovskaia, L.I., Khizhniak, A.N.

Supercooled fog, Fog dispersal, Airports.

## 40-2230

Distribution of ice-forming aerosol in Cb when using antihail rockets in cloud seeding. (O rasprostraneni i doobrazuiushchego aerizolia v Cb pri zaseve ikh s pomoshch'iu protivogradovykh raket). Zimin, B.I., *Tsentral'naia aerologicheskaiia observatoriia. Trudy*, 1984, Vol.156, p.33-41, In Russian with English summary. 16 refs.

Cloud seeding, Cloud dissipation, Hail clouds.

## 40-2231

Measuring ice nuclei in stratiform clouds. (Izmerenie ledian'nykh iader v sloistykh oblakhakh). Vychuzhanina, M.V., et al, *Tsentral'naia aerologicheskaiia observatoriia. Trudy*, 1984, Vol.156, p.60-71, In Russian with English summary. 9 refs.

Miroshnichenko, V.I.

Cloud physics, Ice nuclei, Nucleus counters.

## 40-2232

Measuring air pollution and ice nuclei concentration in industrial regions. (Opyt izmereniia zagriznenosti vozdukhia i koncentratsii ledian'nykh iader v promyshlennom raione). Vychuzhanina, M.V., et al, *Tsentral'naia aerologicheskaiia observatoriia. Trudy*, 1984, Vol.156, p.71-76, In Russian with English summary. 7 refs.

Miroshnichenko, V.I., Parshutkina, I.P., Ramenskii, L.A.

Cloud physics, Ice nuclei, Air pollution, Industrial wastes, Aerosols.

## 40-2233

Study of ice-forming aerosols using the TSI electrical size analyzer. (Issledovanie kharakteristik i doobrazuiushchikh aerizolia s ispol'zovaniem elektricheskogo analizatora chastits). Aksenov, M.I.A., *Tsentral'naia aerologicheskaiia observatoriia. Trudy*, 1984, Vol.156, p.83-93, In Russian with English summary. 6 refs.

Aerosols, Nucleation, Ice nuclei.

## 40-2234

Laboratory studies of the temperature dependence of crystallizing efficiency of propane. (Laboratornye issledovaniia temperaturnoi zavisimosti kristallizuiushchego effektivnosti pri panii). Zemskov, A.N., et al, *Tsentral'naia aerologicheskaiia observatoriia. Trudy*, 1984, Vol.156, p.94-100, In Russian with English summary. 2 refs.

Krasnovskaia, L.I., Khizhniak, A.N., Shevaldina, T.I.

Supercooled fog, Fog dispersal, Experimentation, Equipment, Laboratory techniques.

40-2235

Selection of predictors and evaluation of prognostic correlations in the problem of physico-statistical ice-condition forecasts for the Okhotsk Sea. (Otbor prediktorov i otsenka ustoiichivosti prognosticheskikh svyazey v zadache fiziko-statisticheskogo prognoza ledovykh uslovii Okhotskogo moria). Plotnikov, V.V., *Dal'nevostochnyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.111, p.58-68, In Russian. 12 refs.

Sea ice distribution, Ice conditions, Ice navigation, Charts, Ice forecasting.

40-2236

Model of metastable water and ice-water transformations. (Model' metastabil'noi vody i perekhoda led-zhidkosti). Godizov, A.G., et al, *Institut experimental'noi meteorologii. Trudy*, 1985, Vol.34, p.51-59, In Russian. 9 refs.

Stepanov, A.S. Supercooled clouds, Phase transformations, Ice crystal growth, Cloud physics.

40-2237

Predicting the formation of snowstorms and fresh-snow avalanches in the Chernogorsk area of the Ukrainian Carpathians. (Prognoz lavin metelevogo i svezhevyypavshogo snega v Chernogorskom massive Ukrainykh Karpaty). Grishchenko, V.F., *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.201, p.108-115, In Russian. 20 refs.

Avalanche forecasting, Snow accumulation, Snowstorms, Snowfall, Snowdrifts, Avalanche formation.

40-2238

Water reserves in Ukrainian snow covers. (Zapas vody v snezhnom pokrove na Ukraine). Shcherban', I.M., *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.202, p.41-45, In Russian. 4 refs.

Floods, Snowmelt, Snow accumulation, Snow depth, Snow water equivalent.

40-2239

Cloud physics and weather modification. (Fizika oblakov i aktivnye vozdeistviia). Bakhanova, R.A., ed, *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.3, 128p., In Russian. For selected papers see 40-2240 through 40-2245. Refs. passim.

Khusid, S.V., ed. Cloud physics, Supercooled clouds, Artificial nucleation, Aerosols, Cloud seeding, Smoke generators, Dry ice (trademark), Ice crystals, Ice formation, Silver iodide, Artificial precipitation.

40-2240

Modeling the distribution of artificial crystallization in mixed frontal clouds. (Modelirovanie rasprostraneniia iskusstvennoi kristallizatsii v smeshannykh frontal'nykh oblakakh). Butkov, M.V., et al, *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.3, p.3-16, In Russian. 9 refs.

Pirnach, A.M. Supercooled clouds, Artificial nucleation, Ice nuclei, Ice crystals, Artificial precipitation, Models.

40-2241

Modeling the evolution of clearing zones and artificial precipitation in thick supercooled stratiform clouds during seeding of one line with solid carbon dioxide. (Modelirovanie evoliutsii zon prosveta i iskusstvennykh osadkov v moshchnom perekhlazhdennom sloistom oblake pri zaseve tverdogo uglerodistoi linii). Manzhara, A.A., et al, *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.3, p.29-44, In Russian. 9 refs.

Bakhanov, V.P. Dry ice (trademark), Artificial precipitation, Supercooled clouds, Cloud seeding, Aerosols.

40-2242

Numerical modeling of the artificial crystallization process in thick supercooled stratiform clouds during mass-seeding with solid carbon dioxide. (Chislennoe modelirovanie protsessu iskusstvennoi kristallizatsii v moshchnom perekhlazhdennom sloistom oblake pri massovom zaseve tverdogo uglerodistoi linii). Bakhanov, V.P., et al, *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.3, p.44-56, In Russian. 5 refs.

Manzhara, A.A. Artificial precipitation, Artificial nucleation, Supercooled clouds, Dry ice (trademark), Cloud physics, Models.

40-2243

Studying the characteristics of ice-forming aerosols obtained by burning of pulverized reagents. (Issledovanie kharakteristik l'dobrazuiushchikh aerosolei poluchennykh szhiganiem rastvorov). Bakhanova, R.A., et al, *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.3, p.73-78, In Russian. 8 refs.

Supercooled clouds, Aerosols, Cloud seeding, Smoke generators.

40-2244

Influence of admixtures on photoactivation of ice-forming AgI aerosols. (Vliianie primesei na fotoaktivatsiiu l'dobrazuiushchikh aerosolei AgI). Oleinik, R.V., et al, *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.3, p.79-83, In Russian. 13 refs.

Bakhanova, R.A. Aerosols, Cloud seeding, Silver iodide, Artificial nucleation, Admixtures.

40-2245

Data on turbulence in the central parts of stratiform clouds and artificial crystallization zones. (Nekotorye dannye o turbulentnosti v sloistobraznykh oblakakh srednego iarsa i zonakh iskusstvennoi kristallizatsii). Kudriavtseva, S.K., *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1984, Vol.3, p.102-106, In Russian. 8 refs.

Cloud seeding, Dry ice (trademark), Artificial nucleation, Ice crystal nuclei.

40-2246

Characteristics of heavy icing in the Ukraine. (Nekotorye kharakteristiki sil'nykh goledevo na Ukraine). Volevakh, V.A., et al, *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.204, p.74-81, In Russian. 12 refs.

Bashkirova, L.E. Icing, Hoarfrost, Glaze, Ice accretion, Ice loads, Meteorological charts, Meteorological data.

40-2247

Synoptic-aerological conditions for the formation of heavy icing in the Ukraine. (Sinoptiko-aerologicheskie usloviia formirovaniia sil'nogo golede na Ukraine). Volevakh, V.A., et al, *Ukrainskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.204, p.81-87, In Russian. 6 refs.

Bashkirova, L.E. Icing, Ice loads, Hoarfrost, Ice formation, Glaze, Ice accretion.

40-2248

Investigations of the POLEX South-78 program. Sarukhanian, E.I., ed, New Delhi, Amerind Publishing Co., 1985, 146p., 71 figs., 521 refs. Refs. passim. Translation of Arkticheskii i Antarkicheskii nauchno-issledovatel'skii institut. Trudy. Vyp. 369. Leningrad, Gidrometeoizdat, 1981. For individual papers see 40-2244 and 40-2250 or 40-2251, 4-3331.6 through 4-33210, J-33198 through 33204, J-33206, J-33207 and J-33211.

Smirnov, N.P., ed. Sea ice, Research projects.

This volume presents the results of scientific studies of the POLEX South program carried out from Dec. 1977 to Feb. 1978. The new data on the structure and dynamics of the Antarctic Circumpolar Current, Polar Front Zone and the water masses in the Scotia Sea are analyzed, based on oceanographic survey and on records from underwater buoy stations. The dynamics of the ice mass of Weddell Sea and the atmospheric processes over the Scotia Sea and the Drake Passage are also reviewed. (Auth. mod.)

40-2249

Sea ice in the Weddell Sea: meteorological satellite data during the summer of 1977-78.

Provorkin, A.V., Investigations of the POLEX South-78 program, edited by E.I. Sarukhanian and N.P. Smirnov, New Delhi, Amerind Publishing Co., 1985, p.82-90, For Russian original see 37-3447 or 13F-28122. 3 refs.

Sea ice distribution, Ice volume, Icebergs, Polynyas, Antarctica—Weddell Sea.

Characteristics of the conditions in the Weddell Sea during the summer of 1977-78 were determined from satellite data. The dependence of variations of the position of the ice edge, ice zones of varying concentration, flaw polynya and ice thawing on climatic factors is analyzed on the basis of 5-day maps. (Auth.)

40-2250

Some characteristics of distribution and interaction of water masses in the Davis Sea during autumn. Botnikov, V.N., et al, Investigations of the POLEX South-78 program, edited by E.I. Sarukhanian and N.P. Smirnov, New Delhi, Amerind Publishing Co., 1985, p.107-115, For Russian original see 37-3448 or 13J-28124. 4 refs.

Chuguf, I.V. Sea ice, Ocean currents, Salinity, Water temperature, Seasonal variations, Antarctica—Davis Sea.

An analysis is made of the circulation and the fundamental characteristics of the distribution of the Davis Sea water masses and their movement during the fall. Construction and analysis of maps show the distribution of temperature, salinity, and oxygen at different surfaces and on five vertical sections. Three water masses are identified: antarctic shelf mass, circumpolar deep mass, and antarctic bottom mass. The shelf waters are divided into three layers: fall, summer, and winter.

40-2251

New iceberg detection system: ground wave Doppler radar.

Walsh, J., et al, Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. CORE publication 1985 No.65-16. Proceedings of the IEEE Electronic '85, Toronto, Ontario, Oct. 7-9, 1985, Paper No.85094, 5p. + figs., 10 refs.

Dawe, B.J., Srivastava, S.K. Icebergs, Ice detection, Radar echoes, Wave propagation, Offshore structures, Models.

40-2252

How some condensation and ice nuclei depend on plant activity.

Garczynski, F., Centre national du machinisme agricole du Génie rural des eaux et des forêts, Note No.12, Grenoble, France, 1985, 12p., Unpublished manuscript. Refs. p.10-12.

Ice nuclei, Ice formation, Plant ecology, Climatic changes, Soil water, Vegetation, Cloud droplets, Water table, Diurnal variations, Evapotranspiration.

40-2253

Forecasting fast ice breakup and decay in Puck Bay. (Prognozowanie rozpadu i zaniku lodu na zatoce Puckiej).

Zakrzewski, W., *Instytut meteorologii i gospodarki wodnej. Wiadomości*, 1978, (2-3), p.39-63, In Polish with Russian and English summaries. 16 refs.

Fast ice, Ice breakup, Ice forecasting, Sea ice, Ice melting, Ice deformation, Ice mechanics, Thermal radiation, Dynamic properties, Drift, Poland—Puck Bay.

40-2254

Ice budget of Puck Bay. (Bilans lodowy zatoki Puckiej).

Zakrzewski, W., *Przegląd geograficzny*, 1981, 26(3), p.161-170, In Polish with English summary. 12 refs.

Sea ice distribution, Ice conditions, Ice volume, Hydrology, Meteorological factors, Seasonal variations, Poland—Puck Bay.

40-2255

Ice regime of Puck Bay. (Ustrój lodowy zatoki Puckiej).

Zakrzewski, W., *Geografia*, 1981, 53(1), p.45-57, In Polish with English summary. 13 refs.

Ice conditions, Sea ice distribution, Ice volume, Wind factors, Ice formation, Ice deformation, Drift, Ice breakup, Climatic factors, Topographic effects, Hydrology, Poland—Puck Bay.

40-2256

Ice drift in Puck Bay. (Dryf lodu w zatoce Puckiej).

Zakrzewski, W., *Polska Akademia Nauk. Studia i materialy oceanologiczne*, 1983, No.40, p.321-337, In Polish with English summary. 18 refs.

Ice mechanics, Ice conditions, Drift, Sea ice, Mathematical models, Wind factors, Shear stress, Wind velocity, Poland—Puck Bay.

40-2257

Influence of hydrological and meteorological factors on the development of the ice situation and ice budget of Puck Bay. (Wplyw elementow hidrologicznych i meteorologicznych na rozwój zlodzenia i bilans lodowy zatoki Puckiej).

Zakrzewski, W., *Polska Akademia Nauk. Studia i materialy oceanologiczne*, 1984, No.43, p.150-193, In Polish with English summary. 17 refs.

Sea ice distribution, Ice conditions, Hydrology, Meteorological factors, Ice growth, Ice volume, Fast ice, Ice melting, Drift, Ice breakup, Poland—Puck Bay.

40-2258

Cutting-milling bits for drilling wells in perennially frozen gravel-shingle rock. (Rezhuishche-vrashchast'noe burenie skvazhin v mnogoletnemerykh gravlino-galechnykh porodakh). Peretolchin, V.A., et al, *Gornyi zhurnal*, July 1985, No.7, p.50-52, In Russian.  
Drills, Placer mining, Rotary drilling, Permafrost, Lithology, Gravel, Clays, Sands.

40-2259

Gas inclusions in lake ice and microwave brightness temperature of ice cover. (Gazovye vklucheniia v ozernykh l'dakh i radioiarkostnaia temperatura ledianogo pokrova). Bordonakii, G.S., et al, *Geologiya i geofizika*, Sep. 1985, No.9, p.66-73, In Russian with English summary. 6 refs.  
Krendelov, F.P., Poliakov, S.V.  
Lake ice, Ice structure, Gas inclusions, Ice physics, Brightness, Microwaves.

40-2260

Water-snow streams and their place in the series of similar destructive phenomena. (Vodosnezhnye potoki i ikh mesto v riadu skhodnykh razrushitel'nykh iavlenii). Sapunov, V.N., *Moscow. Universitet. Vestnik. Seriya 5 Geografiia*, Nov.-Dec. 1985, No.6, p.31-37, In Russian. 9 refs.  
Wet snow, Slope processes, Snowmelt, Glacial rivers, Alpine landscapes, Stream flow, Soil erosion.

40-2261

Regionalization of the West-Siberian plate according to the distribution and mean annual temperatures of perennially frozen and thawed rocks. (Racionalirovanie territorii Zapadno-Sibirskoi plity po rasprostraneniui i srednegodovym temperaturam mnogoletnemerykh i talykh porod). Trofimov, V.T., et al, *Moscow. Universitet. Vestnik. Seriya 4 Geologiya*, Sep.-Oct. 1985, No.5, p.69-76, In Russian. 10 refs.  
Kashperuk, P.I., Firsov, N.G.  
Mapping, Permafrost thermal properties, Permafrost distribution, Permafrost thickness, Permafrost structure, Maps, Phase transformations, Frozen rock temperature.

40-2262

Conditions and criteria of the resistance of bituminous concrete road pavements to low temperature fracturing. (Uslovie i kriterii nizkotemperaturnoi treshchinoustoiчивosti dorozhnogo asfal'tobeton). Gubach, L.S., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.12, p.98-101, In Russian. 4 refs.  
Ponomareva, S.G.  
Roads, Fracturing, Pavements, Bituminous concretes, Frost action.

40-2263

Effect of gas cutting on the frost resistance of steel structure details. (Vliianie gazovoi rezki na khladosotkost' detalei stal'nykh konstruktii). Kudrin, V.G., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1985, No.12, p.114-118, In Russian. 6 refs.  
Shafral, S.D., Vorotyntsev, A.G.  
Steel structures, Steels, Frost resistance.

40-2264

Antarctic Committee reports, No.19.  
Avsiuk, G.A., ed, New Delhi, Amerind Publishing Co., 1985, 287p., TT 81-52174, Refs. passim. Translation of *Antarktika. Doklady Komissii*. Vyp. 19. Moscow, Nauka, 1980. For individual papers see 40-2265 through 40-2279 or E-33222 through E-33225, E-33227, E-33228, E-33232 through E-33236, F-33226, F-33229 through F-33231, I-33238, J-33237, K-33239 and K-33240.  
Meetings, Research projects, Antarctica.  
This book contains reports read at the first conference on the History of Antarctic Glaciation, organized in May 1978, by the Paleogeography Section of the Interdepartmental Committee for the Study of the Antarctic. These reports highlight the main stages of changes in the natural conditions of the Southern Hemisphere in the Late Cenozoic and the factors causing these changes (lithospheric plate drift, rebuilding of ocean currents, development of land relief, general cooling), and the development of the Antarctic ice cover. Also discussed are the problems of dividing the periods in the history of glaciation, heat regime and biostratigraphic significance of stratoliths. (Auth.)

40-2265

Continental drift and the Late Cenozoic glaciation of Antarctica.  
Zonenshain, L.P., *Antarctic Committee reports*, 1985, No.19, p.1-15, For Russian original see 38-2400 or 14E-29413. 15 refs.  
Glaciation.

The geological history of Antarctica is reviewed, with illustrations showing the disruption of the supercontinent Australamerica and the reconstruction of continents and oceans of the Southern Hemisphere by the drifting land masses. Australia was separated from Antarctica about 50 m.y.a. The oceanic passage between South America and Antarctica, the Bellingshausen Sea and the Drake Passage, appeared about 25 m.y.a. At that time the Antarctic Circumpolar Current developed and the antarctic ice sheet began to form.

40-2266

Paleogeology of Antarctica (from the viewpoint of tectonics of the lithospheric plates).  
Losev, K.S., et al, *Antarctic Committee reports*, 1985, No.19, p.16-25, For Russian original see 38-2401 or 14E-29414. 15 refs.  
Podgornaia, L.I., Ushakov, S.A.  
Paleoclimatology, Glaciation.

Changes of the earth's shape in connection with the motion of lithospheric plates—continental drift in polar regions, changes of ocean circulation, changes of planetary albedo—are discussed in the light of geophysical evidence of the lowering of temperature of the earth's middle latitudes at the onset of Pleistocene, approximately 70 m.y.a. This phenomenon resulted in the development of Cenozoic glaciation of our planet, with mid-latitude temperatures of 10 to 12°C. Temperature variations were crucial in the formation of massive glaciation and its subsequent collapse. Impulses created by excentric changes of the earth's orbit are discussed in that connection.

40-2267

Causes of Antarctic glaciation.  
Verbitskii, M.I.A., et al, *Antarctic Committee reports*, 1985, No.19, p.26-49, For Russian original see 38-2402 or 14E-29415. Refs. p.45-49.  
Kvasov, D.D.  
Glacier ice, Paleoclimatology, Glaciation, Drake Passage.

The causes of Antarctic glaciation are analyzed by numerical experiments based on a thermohydrodynamic model of a large ice sheet. The cooling at the Eocene-Oligocene boundary was caused by the opening of a strait south of Australia and the formation of the Southern Ring Current. Calculations show that as a result of this the East Antarctic Ice Sheet formed. It exists despite the relatively high temperatures of the surrounding ocean and air. New cooling in the Middle Miocene is associated with the fact that the Southern Ring Current began to pass through the Drake Passage; the glaciers spread over West Antarctica. At the Miocene-Pliocene boundary, as a result of the regression of the World Ocean, the glaciation of the South Polar regions reached its maximum dimensions. During the Quaternary period, glaciations of the Northern Hemisphere reduced the level of the ocean, which led to an increase in the glaciation of Antarctica. The future warming associated with human activity may cause the growth of glaciers in East Antarctica and their reduction in West Antarctica. (Auth.)

40-2268

Antarctic glaciation in light of paleogeographical data.  
Serebriannii, L.R., *Antarctic Committee reports*, 1985, No.19, p.50-59, For Russian original see 38-2403 or 14E-29416. 30 refs.  
Glaciation, Glacier ice.

Arguments are advanced supporting the prolonged and continuous existence of the Antarctic Ice Cover in the Late Cenozoic. The origin of the continental glaciation of Antarctica goes back to the Paleogene-Neogene boundary. The ice sheet finally formed in the Middle Miocene, and reached maximum dimensions at the end of this geologic period, about 5 million years ago. These ideas are clearly linked with the new paleogeographic reconstructions based on the concept of tectonic plates. The glacial history of the Antarctic is correlated with the evolution of the marine basins of the Mediterranean and the Ponto-Caspian. A time conjunction is observed between the maximum Antarctic glaciation and the epoch of the Messinian evaporate basin existence. A review is given of the development of Antarctic glaciation in the Quaternary period as well as an indication of the prospects for future research. (Auth.)

40-2269

Isotopic studies of a core from Vostok Station and their paleogeological interpretation.  
Kotliakov, V.M., et al, *Antarctic Committee reports*, 1985, No.19, p.60-72, For Russian original see 38-2404 or 14F-29417. 25 refs.  
Gordienko, F.G., Barkov, N.I., Korotkevich, E.S.  
Glaciation, Ice composition, Paleoclimatology, Antarctica—Vostok Station.

Oxygen isotope measurements of antarctic ice cores up to 950 m deep at Vostok Station are analyzed. For paleoclimatic reconstruction Vostok Station is much more favorable than Byrd Station, western Antarctica, or Camp Century, Greenland, where ice was drilled down to the bedrock. Numerical corrections of the paleodynamics and growth of the ice cover in the Vostok Station area show that delta-O-18 isotope data reached their present values 10,000 y.a. The culmination of

the late Wisconsin occurs 15 to 29 thousand y.a. with a short interval around 17 t.h.y. The period between 29 and 52 t.h.y.a. is characterized by a generally cold background temperature, with little variation, which, in relation to today's temperature, was 4 to 5 deg. lower. 52 to 63 t.h.y.a. the temperature was even lower than that by 1 deg. On the basis of ice analysis of West Antarctica, it is concluded that in the era representing Wisconsin the climate there was somewhat warmer than today, possibly by 2 to 3 deg.

40-2270

Glaciation of the continental shelf of Antarctica.  
Grosval'd, M.G., *Antarctic Committee reports*, 1985, No.90, p.73-110, For Russian original see 38-2405 or 14E-29418. Refs. p.105-110.

Glaciation, Glacier ice, Ice shelves, Glacier surges.  
This paper presents a summary of Soviet and foreign data on the paleogeology of Antarctica. Early glaciers originated on the continent no later than the beginning of the Eocene. At the first stage (55-25 m.y.a.) the glaciation here was mountain type; at the second (25-5 m.y.a.)—temperate type; and at the third, Pliocene-Quaternary stage (from 5 m.y.a. to the present)—polar type. Only during the last stage did the Antarctic ice cover go outside the land limit and spread on the shelf. The marine parts of this cover were more variable than the land-based parts. Under climatic coolings, they reached the shelf edges, and during the interglacials they decayed. Surges played a great role in these processes. (Auth.)

40-2271

Paleogeological aspects of the study of marine and continental Cenozoic deposits in Antarctica.  
Bardin, V.I., *Antarctic Committee reports*, 1985, No.19, p.111-124, For Russian original see 38-2406 or 14E-29419. Refs. p.120-124.

Moraines, Glaciation, Paleoclimatology.  
Development of antarctic glaciation in the Cenozoic is discussed, and literature of investigations carried out by marine geologists in the southern ocean, with data of paleogeological interest is reviewed, as are paleogeographic surveys carried out on the continent. A map is presented showing the areas where these investigations took place.

40-2272

Evolution of mountain glaciers of the McMurdo Oasis in the last million years.  
Shumskii, P.A., et al, *Antarctic Committee reports*, 1985, No.19, p.125-143, For Russian original see 38-2407 or 14F-29420. 18 refs.  
Miagkov, S.M.

Glacier ice, Ice accretion, Ice temperature, Paleoclimatology, Glaciation, Antarctica—McMurdo Sound.

The history of glaciation of the McMurdo Oasis since its origin is described with an absolute age determination of the main phases. A method is proposed for calculating ice temperature and the rate of accumulation from data on the form and dimensions of the horizontal projection of a stationary glacier. Based on a study of the old moraines of Meserve Glacier, an attempt is made to determine the course of the changes in air temperature and the amount of atmospheric precipitation in the McMurdo Oasis during the last million years. (Auth.)

40-2273

Principles of dividing the history of Antarctic glaciation into periods.  
Miagkov, S.M., *Antarctic Committee reports*, 1985, No.19, p.144-169, For Russian original see 38-2408 or 14F-29421. Refs. p.165-169.

Ice cover, Glacier ice, Ice age theory, Paleoclimatology.

Beginning dates of cover glaciation are given and the causes of its buildup are discussed. The author has evaluated the cooling effect of Antarctic glaciation on the planet's climate. Also examined are the structure of the South Polar glaciation and the factors controlling its dimensions. Qualitatively evaluated is the response of continental glaciation to the changes in climate and the level of the World Ocean. On this basis, and considering existing data on the history of the change in ocean level, the history of the East Antarctic ice cover is divided into periods. The tasks and several lines of further research on the problem are indicated in this paper. (Auth.)

40-2274

On the origin of the glaciers of the McMurdo Sound region based on the oxygen isotope analysis of ice.  
Barkov, N.I., et al, *Antarctic Committee reports*, 1985, No.19, p.170-188, For Russian original see 38-2409 or 14F-29422. 29 refs.  
Gordienko, F.G.

Moraines, Glaciation, Glacier ice, Ice composition, Ice shelves, Antarctica—McMurdo Sound.

Oxygen-isotopic measurements were obtained from ice samples in McMurdo Sound area to determine the origin of ancient ice and its link with the surrounding glaciers. Findings show that the central part of McMurdo Sound shelf ice, that is the entire glacier area covered by a moraine, has been formed from sea water, while in ice samples originating from atmospheric precipitation a certain amount of sea water is found, which has filtered through the glacier's side wall. Isotopic analyses of moraines with ice cores show that a large moraine field between Hobbs and Blue glaciers, from sea level to heights of 300 m, was deposited not by a land glacier but by a glacier of the McMurdo shelf-ice type, formed by sea water at a time of a lowering of sea level. Analysis of ice samples taken from Hobbs, Erebus and Wright Valley glaciers shows that they were formed by atmo-

spheric precipitation. It is concluded that this precipitation occurred at low atmospheric temperatures, at higher altitudes or during a general cooling of the climate.

#### 40-2275 Cenozoic volcanism and the history of Antarctic glaciation.

Poliakov, M.M., *Antarctic Committee reports*, 1985, No.19, p.189-199, For Russian original see 38-2410 or 14E-29423. 11 refs.

#### Glaciation.

This paper presents the results of a study on Cenozoic volcanoclastites, developed on the Indian/Pacific Oceans sector of Antarctica, bounded by 90 deg W and 160 deg E. The material composition, accumulation, and genesis of hyaloclastic strata are discussed on the basis of which a conclusion is drawn about the subglacial nature of the hyaloclastites. Geochronological data are given on subglacial volcanites, which indicate that Antarctic glaciation may have started on the territory under study in the Oligocene or possibly even earlier. (Auth.)

#### 40-2276

#### Main paleogeographical features of the East Antarctic coast in the Upper Pleistocene and Holocene based on marine geological data.

Znachko-Iavorskii, G.A., *Antarctic Committee reports*, 1985, No.19, p.200-208, For Russian original see 38-2411 or 14E-29424. 15 refs.

#### Ice sheets, Glacier ice, Paleoclimatology, Glaciation.

The paper substantiates the stratigraphic division of the upper part of the bottom deposit stratum of the coastal part of the Indian and part of the Atlantic sectors of the southern ocean. Data are cited on the sedimentation, dynamics of ice cover, and sea level oscillations in the Upper Pleistocene and Holocene epoch of relative coolings and warmings. (Auth.)

#### 40-2277

#### Topography and glaciation of the southern Prince Charles Mountains.

Kolobov, D.D., *Antarctic Committee reports*, 1985, No.19, p.209-216, For Russian original see 38-2412 or 14E-29425. 9 refs.

#### Moraines, Glaciation, Glacial geology, Glacier ice, Antarctica—Prince Charles Mountains.

The morphological characteristics of three major types of topography which developed in the Prince Charles Mountains (East Antarctica) are reported: denudation, furrowing (glacial), and periglacial. The paper discusses the history of their formation in the preglacial and glacial periods. Special attention is given to the evolution of glaciation in a mountainous region. (Auth.)

#### 40-2278

#### Spatial relation of the Antarctic glacial topography to the subglacial basement topography

Berliant, A.M., et al, *Antarctic Committee reports*, 1985, No.19, p.231-240, For Russian original see 38-2413 or 14E-29427. 9 refs.

Vasil'eva, T.F., Suetova, I.A.

#### Ice structure, Ice cover, Mapping.

The discussion of the spatial relations of the antarctic subglacial basement topography to the relief of the ice cover is based on a detailed cartographic analysis, the calculation of moving average correlation indices, and the compilation of correlation maps. The correlation maps between the antarctic glacial and subglacial relief show three distinct types of regions: areas of direct positive relations, areas of inverse negative relations and transition areas. Despite the fact that the viscoelastic properties of ice generally determine the elliptic form of the antarctic ice cover profile, the peculiarities of the basement relief show up distinctly on the topography of the ice surface. (Auth.)

#### 40-2279

#### Thermal regime of the Ross Sea under the Ross Ice Shelf.

Zotikov, I.A., et al, *Antarctic Committee reports*, 1985, No.19, p.241-249, For Russian original see 38-2414 or 14J-29428. 4 refs.

Zagorodnov, V.S.

#### Ice shelves, Antarctica—Ross Ice Shelf.

This paper discusses the thermal model of the water masses under the Ross Ice Shelf. Also reported are the instrumental data on water temperature obtained by the authors using a highly sensitive quartz thermometer. Two inhomogeneous isothermal layers of water are distinguished by these data. Currents under the ice shelf are discovered and their velocity is measured. An estimate is made of the heat flux: controlling the processes of melting and freezing at the lower surface of the ice shelf. The authors describe a program of further operations aimed at studying the mass exchange at the lower surface of the Ross Ice Shelf by using underwater ultrasonic sounding. (Auth.)

#### 40-2280

#### AMERIEZ 1983: a summary of activities on board the R/V *Melville* and USCGC *Westwind*.

Ainley, D.G., et al, *Antarctic journal of the United States*, 1984, 19(5), p.100-103.

Sullivan, C.W.

#### Oceanography, Pack ice, Sea ice, Ice edge, Cryobiology, Scotia Sea, Antarctica—Weddell Sea.

As part of the Antarctic Marine Ecosystem Research at the Ice-Edge Zone (AMERIEZ), 41 scientists on two ships collaborated in an interdisciplinary oceanographic project in the southern Scotia and north-western Weddell Seas. Studies focused on

two major hypotheses: (1) the pack-ice edge is associated with a major oceanographic front where, due to little-understood processes, enhanced biomass and productivity occur and (2) the seasonal advance and retreat of the ice margin, which is an ecological interface between two communities, strongly affects the natural history of most organisms residing in the vicinity. R/V *Melville*, from Scripps Institution of Oceanography, provided a research platform in open waters. Simultaneously, on a complementary track, USCGC *Westwind* provided a research platform in the pack ice. Observations included sea-ice characteristics and concentrations, and the physical, chemical, and biological properties of the marginal ice zone. Spatial changes in biological activity/conditions were evident, as well as seasonal changes precipitated by the retreating ice.

#### 40-2281

#### Growth rates, distribution, and abundance of bacteria in the ice-edge zone of the Weddell and Scotia Seas, Antarctica.

Miller, M.A., et al, *Antarctic journal of the United States*, 1984, 19(5), p.103-105, 9 refs.

Krempin, D.W., Manahan, D.T., Sullivan, C.W.

#### Sea ice, Ice edge, Cryobiology, Antarctica—Weddell Sea, Scotia Sea.

The overall hypothesis of the Antarctic Marine Ecosystem Research at the Ice-Edge Zone (AMERIEZ) project is that the marginal ice zone is associated with an oceanographic front where biomass and biological productivity are enhanced. The specific goal of this work was to examine the hypothesis that bacterial production contributes significantly to enhanced productivity and biological activity in the marginal ice zone. To test this hypothesis, data were collected on board the R/V *Melville* and USCGC *Westwind* from 5 Nov. through 2 Dec. 1983 at 59 stations in a 70,000-square kilometer region of the Weddell and Scotia Seas. The vertical and horizontal distribution, activity and growth rates (u) of bacteria were examined in the sea ice and water column. In addition, cores of sea ice were obtained at selected *Westwind* stations for analysis of nutrients, biomass, and metabolic activities of the sea-ice microbial community. To assess the levels of potential heterotrophic substrates present, measurements were made of naturally occurring dissolved free amino acids (DFAA) using newly developed techniques involving high-performance liquid chromatography (HPLC). The coupling between primary and secondary (bacterial) production was also examined.

#### 40-2282

#### Phytoplankton dynamics of the marginal ice zone of the Weddell Sea, November and December 1983.

Nelson, D.M., et al, *Antarctic journal of the United States*, 1984, 19(5), p.105-107, 10 refs.

Gordon, L.I., Smith, W.O.

#### Cryobiology, Ice edge, Sea ice, Antarctica—Weddell Sea.

During the AMERIEZ cruise, Nov.-Dec. 1983, a coordinated two-ship study was made of the phytoplankton and nutrient dynamics of the marginal ice zone of the Weddell Sea aboard the R/V *Melville* and the USCGC *Westwind*. During the cruise, a phytoplankton bloom was observed in the marginal ice zone of the Weddell Sea that was of approx the right magnitude to confirm earlier predictions that there should be an ice-edge bloom here of sufficient magnitude to increase estimates of the annual primary productivity of the Weddell Sea by approx 100 percent. It is speculated that processes other than nutrient transport to the surface by wind-driven upwelling are involved in producing the Weddell Sea bloom.

#### 40-2283

#### Phytoplankton, ice algae, and choanoflagellates from AMERIEZ, the southern Atlantic and the Indian Oceans.

Fryxell, G.A., et al, *Antarctic journal of the United States*, 1984, 19(5), p.107-109, 13 refs.

Theriot, E.C., Buck, K.R.

#### Algae, Cryobiology, Sea ice, Plankton, South Atlantic Ocean, Indian Ocean.

The phytoplankton in the net hauls deep in the ice on the USCGC *Westwind* on the AMERIEZ project in the austral spring were sparse but were mostly in the vegetative stage. Few resting spores were seen, even in ice cover conditions that approached winter, but small grazers were abundant, as were fecal pellets. In the ice were diatoms, although there were many empty cells. However, in the golden slushy layer just below the water line, healthy diatoms and prymnesiophytes dominated. As the ship came out of the ice, a bloom of gelatinous colony formers, *Phaeocystis* and *Thalassiosira*, was encountered. *Phaeocystis* could have been seeded from the ice; the diatom *Thalassiosira* was not. This work is compared to that done in the southwest Atlantic in cooperation with the British Antarctic Survey.

#### 40-2284

#### Microheterotrophs in the ice-edge zone.

Garrison, D.L., et al, *Antarctic journal of the United States*, 1984, 19(5), p.109-111, 5 refs.

Buck, K.R., Silver, M.W.

#### Plankton, Ice edge, Sea ice, Cryobiology, Ecology.

As part of the Antarctic Marine Ecosystem Research in the Ice-Edge Zone (AMERIEZ) program aboard the USCGC *Westwind*, a study was conducted to assess the importance of microheterotrophs (protozoans and small metazoans) in the ice-edge system. Among water samples abundance and biomass was generally low at ice-covered stations, but both numbers and biomass increased reaching a maximum at ice-edge stations. The general abundance of microheterotrophs in sea ice suggests these are active sites of production and may be particularly important in late winter or early spring when the water column

is mostly ice covered and pelagic production low. The diversity among micropopulations in ice was somewhat surprising. Among autotrophic forms, flagellates and naked dinoflagellates often dominated biomass (and probably the activity as well) in spite of the prevailing view that ice diatoms predominate in these communities. The variety of heterotrophic forms suggests a complex food web within ice communities.

#### 40-2285

#### Reproductive dynamics of ciliates in the ice-edge zone.

Heinbokel, J.F., et al, *Antarctic journal of the United States*, 1984, 19(5), p.111-113, 4 refs.

Coats, D.W.

#### Plankton, Ice edge, Sea ice, Cryobiology, Ecology.

During the Antarctic Marine Ecosystem Research at the Ice-Edge Zone (AMERIEZ) cruise in the Weddell Sea (4 Nov. to 14 Dec. 1983) aboard R/V *Melville*, populations of two genera of tintinnids (free-living ciliates of the suborder Tintinnina) were sampled and examined to define the reproductive dynamics of these plankters. This phase of work was focused on two goals: to characterize the diel periodicity (if any) in the cell division cycle of these ciliates, and to determine how the reproductive dynamics of these ciliates respond to the gradients of bacterial and phytoplanktonic biomass and productivity expected near the edge of the seasonal pack ice. There was no indication of a diel periodicity in the division process. Division frequencies, however, appear to be related to latitude with higher proportions of dividing *Lauckmanniella* found at the more southern stations; *Cymatocylis* is characterized by the inverse pattern. Relationships of tintinnid reproduction to bacterial dynamics have not yet been examined.

#### 40-2286

#### Observations of plankton organisms obtained by bongo nets during the November-December 1983 ice-edge investigations.

Brinton, E., *Antarctic journal of the United States*, 1984, 19(5), p.113-115, 2 refs.

#### Plankton, Ice edge, Ecology, Sea ice, Scotia Sea.

The objectives of this study conducted aboard R/V *Melville* during the AMERIEZ cruise were to determine kinds and amounts of net-plankton and their distribution in relation to the ice-cover history of the waters in the vicinity of the ice edge. The area encompassed part of the Scotia-Weddell Sea confluence, from the banks of the South Scotia arc, northward. Predominant organisms collected were pelagic tunicates, or salps (*Salpa thompsoni*), concentrations of large phytoplankton cells, and euphausiid crustaceans. *Euphausia superba* (krill) have been analyzed for size-frequency and state of maturity. Amphipod crustaceans, at varying abundances, were associated with the salps. Copepods were sparse but consistently present; a single tow was dominated by copepods (*Calanoides acutus*). Gymnosome and thecosomatous Pteropoda (*Limacina* and *Clio* spp.) were regularly present, as were Chaetognaths, and polychaetous annelids (*Tomopteris*). Fish larvae averaged only 3 or 4 per sample. *Salpa thompsoni* was consistently at higher density than had been observed during the 1981 season, when salps were rare.

#### 40-2287

#### Acoustic and net assessment of the distribution and abundance of micronekton and nekton in the Weddell Sea, November and December 1983.

Macaulay, M.C., et al, *Antarctic journal of the United States*, 1984, 19(5), p.115-117, 8 refs.

Daly, K.L., English, T.S.

#### Plankton, Ice edge, Sea ice, Ecology, Cryobiology, Pack ice, Antarctica—Weddell Sea.

The use of hydroacoustic methods in conjunction with net catches to survey and assess the abundance and distribution of micronekton and nekton in relation to the ice-edge zone in the Weddell Sea is discussed. Acoustic observations were conducted in open water aboard the R/V *Melville*, both underway and at fixed stations. Acoustic observations were made and net samples collected at the ice edge and in the pack ice aboard the USCGC *Westwind* at fixed stations. The observation techniques are described. Acoustic observations made in open water indicated very few occurrences of krill in patches; instead, large concentrations of salps were found. The small patches were found near the ice edge with a rapid decrease in occurrence away from the ice edge. Acoustic and net data collected aboard the *Westwind* showed concentrations of salps at the ice edge but not within the pack ice. Patches of krill were not observed at the ice edge. However, three species of krill of several life stages were collected. Chart records from the pack ice are characterized by small scattered patches of krill present at all stations in the upper 100 m of the water column. Net samples indicate that juvenile *Euphausia superba* and adult *Thysanoessa macrura* were present throughout the pack ice.

#### 40-2288

#### AMERIEZ 1983: Oceanographic factors affecting seabird occurrence in the Scotia and Weddell Seas.

Ainley, D.G., et al, *Antarctic journal of the United States*, 1984, 19(5), p.119-121, 1 ref.

Fraser, W.R.

#### Cryobiology, Pack ice, Sea ice, Ecology, Scotia Sea, Antarctica—Weddell Sea.

In conjunction with AMERIEZ, the pack-ice/open-water system was studied in detail to determine whether occurrence patterns of seabirds were responses to changes in prey availability and prey types or to changes in the physical features of the environment. Birds were most abundant at the pack-ice edge and at the confluence of the Scotia and Weddell Seas about 600 km north of ice-edge zone. South of the ice edge, concentrations were associated with both increasing biological activity in

the lower food web and with distinct ice types, including floes exhibiting especially high organic activity. In the pack ice large amphipod and decapod crustaceans were predominant in seabed diets, while euphausiids and mysidophid fishes increased in importance in the marginal ice zone. In open water, the predominance of mysidophids, euphausiids, amphipods, and salps shifted in the diets. The results indicate that physical features of the environment are important in affecting seabird occurrence in the pack-ice/open-water situation, however for a few species exhibiting more specialized diets, i.e., squid eaters, prey availability may be more important.

#### 40-2289 Ecology of sea-ice microbial communities in McMurdo Sound.

Kottmeier, S.T., et al, *Antarctic journal of the United States*, 1984, 19(5), p.129-131, 14 refs.

Muscat, A.M., Craft, L.L., Kastendiek, J.E., Sullivan, C.W.

Microbiology, Cryobiology, Sea ice, Ecology, Microbiology, Antarctica—McMurdo Sound.

Research experiments investigating the physiology and ecology of sea ice communities in McMurdo Sound are described. The following questions are addressed: What is the influence of temperature on microalgal photosynthesis? What are the rates of primary and bacterial production in the annual sea ice and underlying water column during the austral spring/summer? What microfauna and macrofauna are associated with the sea ice, and do they graze on microalgae of the sea ice microbial community? The results of temperature experiments showed peak fixation of carbon by the sea-ice microbial community between 4°C and 8°C. In a light perturbation experiment, a snow-free quadrat (100 sq m), and a snow-covered quadrat (100 sq m) were maintained on the annual sea ice. Downwelling irradiance beneath the snow-free quadrat was maximally 8% of surface irradiance, while beneath the snow-covered quadrat it was 0.02%. The low irradiance beneath the snow-covered quadrat prevented significant microalgal photosynthesis. Maximum amounts of chlorophyll *a*, carbon fixation, and bacterial production were 1-2 orders of magnitude greater in the snow-free quadrat than the snow-covered one. Maximum chlorophyll *a*, carbon fixation and bacterial production were found in the water column below sea ice during a *Phaeocystis* sp. bloom. This research suggests that the sea ice microbial communities contribute significant primary and secondary production to polar marine ecosystems by growth in sea ice at temperatures close to -1.8°C, despite optimal metabolism at temperatures above freezing. Large accumulations of microalgae result from growth with adequate nutrients and light, and possibly low grazing pressure by macrofauna.

#### 40-2290 Photoadaptation in sea-ice microalgae in McMurdo Sound.

Palmisano, A.C., et al, *Antarctic journal of the United States*, 1984, 19(5), p.131-132, 5 refs.

SooHoo, J.B., Sullivan, C.W.

Algae, Cryobiology, Ecology, Sea ice, Antarctica—McMurdo Sound.

Studies of the relationship between photosynthesis and irradiance in sea-ice microalgae collected from the bottom of conglaciation ice at Cape Armitage are summarized. A maximum photosynthetic rate ( $P_{max}$ ) of 0.06 mg of carbon per milligram of chlorophyll *a* per hour was reached at 5 microEinsteins per sq m per sec. This  $P_{max}$  is significantly lower than those for temperate phytoplankton whose  $P_{max}$  rates usually range from 2-10 mg of carbon per mg of chlorophyll *a* per hour (Falkowski 1981). Photosynthesis was inhibited at irradiances >60 microEinsteins per sq m per sec. The data demonstrate the extremely shade-adapted nature of photosynthesis in ice microalgae. Sea-ice microalgae are currently being used as a model to study the rate of photoadaptation to altered light fields.

#### 40-2291 *Thalassiosira antarctica* (Bacillariophyceae): vegetative and resting stage ultrastructure of an ice-related marine diatom.

Doucette, G.J., et al, *Polar biology*, 1985, 4(2), p.107-112, 27 refs.

Fryxell, G.A.

Algae, Ice edge, Marine biology.

The ultrastructure of *Thalassiosira antarctica* vegetative and resting stages are compared using light and transmission electron microscopy. Resting spores contain noticeably more lipid reserves than do vegetative cells. Numerous mitochondria and generally fewer numbers of other organelles are eliminated from spores into an abortive daughter cell when the spore formation division sequence is terminated. The remaining spore contents are a compact arrangement of organelles with lipid bodies predominate. These two stages are thus ultrastructurally distinct, and differences in their chemical composition can be manifested as cytological modifications. (Auth.)

#### 40-2292 Resting spore formation in the antarctic diatoms *Coscinodiscus furcatus* Karsten and *Thalassiosira australis* Peragallo.

Syverson, E.E., *Polar biology*, 1985, 4(2), p.113-119, 19 refs.

Algae, Sea ice, Marine biology.

The resting spore morphology of the diatoms *Coscinodiscus furcatus* Karsten and *Thalassiosira australis* Peragallo is described. The spore valve of *C. furcatus* differs from those of the vegetative cells primarily by a greater convexity and a coarser and more distinctly fasciculated areolation. This resting spore is identical to the diatom traditionally identified as *C. stellaris*

var. *symbolophorus* (Grunow) Jørgensen. The resting spore of *T. australis* differs from the vegetative cells by a lack of clusters of strutted processes in a modified ring on valve face, a coarser areolation and tangential rows of areolae, and a narrower and more simply structured girdle. The resting spore valve of *T. australis* has been described as belonging to a separate species, *Actinocyclus excentricus* Peragallo. (Auth.)

#### 40-2293 Vegetation and ecology of ice-free areas of northern Victoria Land, Antarctica. 2. Ecological conditions in typical microhabitats of lichens at Birthday Ridge.

Kappen, L., *Polar biology*, 1985, 4(4), p.227-236, 30 refs.

Lichens, Mosses, Snow cover effect, Antarctica—Victoria Land.

At Birthday Ridge, a small ice free area in northern Victoria Land, cryptogamic vegetation is mostly confined to gaps between granitic rocks. The sheltering effect on lichens and mosses was analyzed by continuous measurements of the microclimate at various levels between the rocks. Although warming by solar radiation was favorable for the existence of cryptogams, rocks strongly insulated were mostly devoid of lichens and mosses. The presence of lichens was dependent on the moisture conditions of the habitat. It was observed that snow, the only source of moisture, accumulated in summer only in deeper levels between rocks, and that the snow rapidly melted on contact with the lichens. After a snow shower, *Usnea sulphurea* gained 67% and *Umbilicaria decussata* 94% of their maximum water capacity. (Auth. mod.)

#### 40-2294 Stefan problem with one space variable. (Zadacha Stefana s odno prostranstvennoy peremennoy).

Kaliev, I.A., et al, *Akademiia nauk SSSR. Doklady*, 1985, 285(4), p.861-865, In Russian. 8 refs.

Mel'manov, A.M.

Stefan problem, Heat transfer, Boundary value problems.

#### 40-2295 Pollution of Arctic seas by radioactive wastes from West European nuclear reprocessing plants.

Vakulovskii, S.M., et al, *Soviet atomic energy*, June 1985 (publ. Dec. 85), 58(6), p.509-514, Translated from *Atomnaya energiya*. 10 refs.

Nikitin, A.I., Chumichev, V.B.

Water pollution, Radioactive wastes, Sea water, Ocean currents, Charts.

#### 40-2296 Proceedings.

Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984, *Annals of glaciology*, 1985, Vol.6, 329p., Refs. passim. For individual papers see 40-2297 through 40-2388 or F-33287, F-33289 through 33297, F-33299 through 33306, I-33288 and J-33298.

Snow surveys, Ice surveys, Glaciology, Hydrology, Meetings, Ice physics, Meltwater, Snow physics.

The symposium was held at Sapporo, Japan, in Sep. 1984. There were 186 registered participants, 2/3 of whom were Japanese. The proceedings include: 92 full papers and several abstracts (p.321-329). The main topics are glaciology, snow, ice and meltwater.

#### 40-2297 Contribution to the prediction of slush avalanches.

Hestnes, E., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.1-4, 6 refs.

Slush, Avalanche formation, Geomorphology, Snow cover stability, Mountains, Avalanche forecasting, Damage, Climatic factors, Snow ice interface, Grain size.

#### 40-2298 Avalanche flow dynamics with material locking.

Lang, T.E., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.5-8, 11 refs.

Nakamura, T., Dent, J.D., Martinelli, M., Jr.

Avalanche mechanics, Hydrodynamics, Flow rate, Friction, Velocity, Dynamic properties.

#### 40-2299 Characteristics of flowing snow and avalanche impact pressures.

McClung, D.M., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.9-14, 12 refs.

Schaer, P.A.

Avalanche mechanics, Impact strength, Flow rate, Snow loads, Pressure, Snow density, Grain size.

#### 40-2300 Computer study of snow avalanche static dynamics.

Nakamura, T., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.15-18, 10 refs.

Abe, O., Numano, N., Lang, T.E.

Avalanche mechanics, Avalanche formation, Hydrodynamics, Wet snow, Computer applications, Friction, Viscous flow, Analysis (mathematics).

#### 40-2301 Measurement of avalanche speeds and forces; instrumentation and preliminary results of the Ryggfonna Project.

Norem, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.19-22, 9 refs.

Visterby, T.K., Evensen, B.D.

Avalanche mechanics, Impact strength, Concrete structures, Snow loads, Time factor, Dams, Pressure.

#### 40-2302 Meteorological conditions that initiate slashflows in the Central Brooks Range, Alaska.

Onesti, L.J., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.23-25, 13 refs.

Slush, Snow accumulation, Avalanche formation, Flow rate, Snowmelt, Meteorological factors, Alpine glaciation.

#### 40-2303 Measurement and analysis of the motion of dense flow avalanches.

Salm, B., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.26-34, 10 refs.

Gubler, H.

Avalanche mechanics, Flow rate, Slope orientation, Flow measurement, Profiles, Analysis (mathematics).

#### 40-2304 Errors and corrections in calculation of heat flux in Antarctic surface snow.

Kikuchi, T., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.35-38, 10 refs.

Wada, M., Yamanouchi, T.

Snow heat flux, Temperature measurement.

This paper describes errors and corrections in snow heat flux when it is calculated using the numerical differentiation and integration method. The data obtained by the 20th Japanese Antarctic Research Expedition during GARP-POLEX in 1979 are used as a test case. Four factors are considered as causes of errors: a) temperature resolution, b) integration, c) determination of snow density and d) the deepest boundary condition. Factors a) and b) are significant in short term estimation, and the total error exceeds 90% if a daily value is calculated. The errors from a) can be reduced if the temperature is averaged over a long period, while those from b) become small in long term flux calculations. The total error can be reduced to 10% in monthly flux, while the improvement is limited by c) and d). If a constant thermal diffusivity is assumed between two levels of temperature measurement, a numerical filter which compensates for the effect of b) is composed. By using running averages in deep layers ( $z > 0.5$  m) and the numerical filter in shallow layers ( $z < 0.5$  m), hourly flux can be calculated with errors of about 30%. (Auth.)

#### 40-2305 Air and water vapour convection in snow.

Klever, N., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.39-42, 26 refs.

Snow cover, Convection, Water vapor, Snow air interface, Heat transfer, Mass transfer, Meltwater, Thermal effects, Analysis (mathematics), Snowmelt.

#### 40-2306 Experiments on thermal convection in snow.

Powers, D., et al, *Annals of glaciology*, 1985, Vol.6, MP 006, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.43-47, 16 refs.

Convection, Heat transfer.

Snow physics, Convection, Heat transfer.

Thermal convection is observed in snow and in a compact of water-saturated glass beads. While uncertainty in the permeability of the snow limits our ability to compare the observed and calculated onset of convection, agreement between the observed and calculated effects of convection on heat transfer in snow is good. Experimental results with glass beads agree with both the calculated onset of and heat transfer by convection. Attempts are made to assess the effects of convection on snow metamorphism. While much is still uncertain about the significance of thermal convection in snow, it is clear that the phenomenon does occur.

40-2307

**Modelling a snowdrift by means of activated clay particles.**

Anno, Y., *Annals of glaciology*, 1985, Vol.6, MP 2007, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.48-52, 12 refs.

**Snowdrifts, Snow mechanics, Water content, Models, Wind velocity, Clay soils, Snow fences.**

40-2308

**Two-dimensional solutions for a turbulent continuum theory for the atmospheric mixture of snow and air.** Decker, R., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.53-58, 5 refs.

**Snow air interface, Turbulent flow, Snow mechanics, Air flow, Snowflakes, Buoyancy, Theories, Velocity, Models.**

40-2309

**Effect of blowing snow on katabatic winds in Antarctica.**

Kodama, Y., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.59-62, 21 refs.

**Wendler, G., Gosink, J. Wind velocity, Blowing snow, Snow density, Antarctica—Adelie Coast.**

An acceleration of the katabatic winds during periods of blowing snow was observed in Adelie Land. Data collected by Automatic Weather stations showed a change in the relationship between the katabatic term of the surface geostrophic wind (katabatic force) and the wind speed for periods of blowing snow. When measurements of the katabatic force were plotted against the cube of the wind speed, the slope was steeper for wind speeds at less than a threshold speed for blowing snow. The difference between these two slopes was partly explained by the effect of blowing snow entrained into the atmospheric boundary layer (Auth.)

40-2310

**Wind-tunnel experiments on blowing snow.**

Maeno, N., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.63-67, 11 refs.

**Wind tunnels, Blowing snow, Heat transfer, Electric charge, Air temperature, Wind velocity, Pressure.**

40-2311

**Design criteria and location of snow fences.**

Norem, H., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.68-70, 9 refs.

**Snow fences, Snowdrifts, Drifting snow, Design criteria, Wind velocity.**

40-2312

**Characteristics of drifting snow at Mizuho Station, Antarctica.**

Takahashi, S., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.71-75, 11 refs.

**Snowdrifts, Wind velocity, Antarctica—Mizuho Station.**

Observations of drifting snow were carried out at Mizuho Station, 2230 m above sea level, in 1982. Drift flux was proportional to about the 8th power of wind velocity above 1 m and about the 4th power below 0.1 m, while snow drift transport rate was proportional to about the 5th power. For drift flux at 1 m height, the power had a temperature dependence, decreasing above -20°C. Visibility was proportional to about the -8th power of wind velocity; this is explained by the power relation between drift flux and wind velocity. The repose angle of drifting snow particles was observed by the inclination of a cone-shaped deposit on a disk, it was more than 80 deg when snow was falling and less than 80 deg without precipitation. The fall velocity of drifting snow particles, obtained by time-marked trajectories of particles, was between 0.3 and 0.9 m/s, and depended on wind velocity and snow particle shape (Auth.)

40-2313

**Climatic shift of the equilibrium line; Kuhn's concept applied to the Greenland Ice Cap.**

Ambach, W., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.76-78, 17 refs.

**Ice sheets, Heat balance, Heat transfer, Glacier ablation, Climatic changes, Cloud cover, Altitude, Temperature gradients, Analysis (mathematics), Seasonal ablation.**

40-2314

**Grain growth and mechanical behaviour of polar ice.** Duval, P., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.79-82, 21 refs.

**Grain size, Ice mechanics, Ice deformation, Ice crystal growth, Antarctica—Byrd Station.**

Crystal size in polar ice caps increases with depth from the snow surface down to several hundred meters. Data on crystal growth in isothermal polar snow and ice show the same linear relationship between the size of crystals and their age. This paper reviews the mechanical behavior of polar ice which exhibits grain growth. Grain boundary migration associated with grain growth appears to be an efficient accommodation process for grain boundary sliding and dislocation glide. For grain growth to occur, strain energy must always be lower than the free energy of boundaries. The sintering of ice particles in polar firm is energized by the pressure due to the overburden of snow. Dislocation creep must be taken into account to explain the densification rate in the intermediate and final stage. Constants of power law creep should depend on the crystal growth rate. (Auth.)

40-2315

**Experimental studies on densification and pressure-sintering of ice.**

Ebinuma, T., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.83-86, 6 refs.

**Maeno, N. Ice sintering, Ice density, Ice creep, Temperature effects, Pressure, Time factor.**

40-2316

**Field frost heave prediction related to ice segregation processes during soil freezing.**

Fukuda, M., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.87-91, 16 refs.

**Kinoshita, S. Frost heave, Soil freezing, Soil water migration, Ground ice, Capillarity, Forecasting, Models, Frost penetration, Temperature gradients.**

40-2317

**Acidity of snow and its reduction by alkaline aerosols.** Kumai, M., *Annals of glaciology*, 1985, Vol.6, MP 2008, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.92-94, 9 refs.

**Snow composition, Chemical properties, Aerosols, Countermeasures, Scanning electron microscopy, Hydrogen ion concentration, Fly ash.**

Snow crystals scavenge aerosols in the atmosphere during the processes of growth and precipitation. Several kinds of flyash are found in acid snow by scanning electron microscope examination. Flyash particles from coal fired electric power plants in Fairbanks, Alaska, were found to be spherical or irregular in shape with a 0.2 to 50 micron diameter, and were rich in calcium, silicon, aluminum and iron. The pH of 35 snow samples in Fairbanks ranged from 5.60 to 7.48. The acid snow was changed to alkaline snow by dry fallout of calcium-rich flyash from the electric power plants, which were using calcium-rich Alaskan coal.

40-2318

**Settlement force on a beam in snowpack by computer modelling.**

Lang, T.E., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.95-99, 4 refs.

**Nakamura, H. Abe, O. Snow cover structure, Settlement (structural), Snow compression, Bearing strength, Snow creep, Snow depth, Viscosity, Snow density, Computer applications, Models, Analysis (mathematics), Beams (supports).**

40-2319

**Measurements of thermal parameters in antarctic snow and firm.**

Lange, M.A., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.100-104, 18 refs.

**Firn, Thermal conductivity, Snow thermal properties, Snow density, Antarctica—Filchner Ice Shelf.**

Values of effective thermal conductivities of snow and firm were obtained at Filchner Ice Shelf. A transient line source method (a needle probe with a diameter of 1.6 mm) for conductivity determination, which allows quick measurements with high spatial resolution, was employed. The data yield a linear relationship between effective thermal conductivity and density of snow, which implies a strong dependence of thermal conductivity on density. Comparison of thermal conductivities and other snow pit data suggests that density alone is a poor measure of effective thermal conductivities of snow and firm. It is

proposed that grain structure is probably the governing parameter in determining heat transport in the upper firm layers (Auth.)

40-2320

**Studies on structures and physical properties of snow on Mizuho Plateau, Antarctica.**

Nishimura, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.105-107, 5 refs.

**Maeno, N. Depth hoar, Snow cover structure, Snow physics, Antarctica—Mizuho Plateau.**

Relations between structures and physical properties of snow of four 30-m cores in Mizuho Plateau were investigated by measuring their specific areas of internal free surfaces and air permeabilities, which decreased with increasing depth. Both of the depth profiles showed a kink at a depth of a critical density 550 kg/cu m, indicating a change in the physical mechanism of densification. The drastic decrease of the specific areas above the depth of the kink was considered to be mainly caused by rounding and growth of ice particles; the gradual decreases below the kink were attributed to the development of bonding and particles. Measured air permeability was compared with the theoretical one for randomly packed powders of uniformly sized solid particles. The discrepancy between the measured and theoretical permeabilities was explained by the change in shapes and sizes of air channels in the snow. The depth hoar formation, which was active in regions with smaller accumulation of snow, was considered to result in the favorable shapes of channels for air permeation. (Auth.)

40-2321

**Enclosure of air during metamorphosis of dry firm to ice.**

Stauffer, B., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.108-112, 21 refs.

**Schwander, J., Oeschger, H. Ice dating, Air entrainment, Firn, Metamorphism (snow), Ice composition, Bubbles.**

If cold firm has reached a density of about 0.55 Mg/cu m, further densification occurs by a sintering process which increases the contact surface between the firm grains. The pore volume is decreasing continuously but the firm remains permeable to air up to a density of 0.82 Mg/cu m. At about this density the remaining air in the pore volume is closed off in isolated bubbles. The age and the age distribution of the air enclosed in bubbles relative to the age of the surrounding ice, and the development of the pore volume in firm, are investigated. A newly constructed measuring device allows the field measurement of the amount of air which is already enclosed in bubbles of firm samples. Measurements have been made during summer 1983 in Greenland and during winter 1983/84 at the South Pole. The results are discussed and compared with results obtained with a simplified statistical sintering model, using some results of percolation theory (Auth.)

40-2322

**Estimation and effects of internal accumulation on five glaciers in Alaska.**

Trabant, D.C., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.113-117, 18 refs.

**Mayo, L.R. Glacier alimentation, Firn, Glacier mass balance, Thermodynamic processes, Temperature effects, Climatic factors, Ice temperature, Rainfall.**

40-2323

**Extinction and absorption of solar radiation within a snow cover.**

Fukami, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.118-122, 9 refs.

**Kojima, K., Aburakawa, H. Snow cover, Solar radiation, Radiation absorption, Snow compaction, Snow water content, Radiation measuring instruments, Snow density, Metamorphism (snow), Snow temperature, Snow depth.**

40-2324

**Effect of snow cover on time lag of runoff from a watershed.**

Kobayashi, D., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.123-125, 8 refs.

**Motoyama, H. Runoff, Snow cover effect, Watersheds, Meltwater, Snow depth, Snow stratigraphy, Time factor.**

## 40-2325

Grain coarsening of snow particles immersed in water and solutions.

Tsushima, K., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.126-129, 13 refs.

## 40-2326

Formation processes of ice fabric pattern in ice sheets.

Azuma, N., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.130-134, 15 refs.

## Higashi, A.

Ice crystal structure, Compressive properties, Ice deformation, Ice sheets, Strains, Experimentation, Analysis (mathematics).

## 40-2327

Thermally and mechanically induced regelation of ice.

Horiguchi, K., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.135-137, 10 refs.

## Miller, R.D.

Regelation, Supercooling, Ice formation, Ice melting, Cold chambers, Temperature effects, Analysis (mathematics).

## 40-2328

On the internal melting phenomenon (puddle formation) in fast sea ice, East Antarctica.

Ishikawa, N., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.138-141, 10 refs.

## Kobayashi, S.

Albedo, Meltwater, Sea ice, Thermal conductivity, Antarctica—Lützow-Holm Bay.

Extensive internal melting (puddle formation) was observed on the sheet of fast sea ice near Ongul Island in Nov., 1980. Surface melting was not seen and puddles did not form beneath snow cover with a high albedo (0.7 to 0.8) but were present in bare sea ice with low albedo (0.2 to 0.3). Electro-conductivities of puddle water ranged from 3.3-6.6 mS/cm, these were higher than for drinking water from an iceberg or snow drift (below 0.9 mS/cm). Puddle water is therefore considered to originate from the internal melting of sea ice, as a result of the internal absorption of solar radiation from the surface down to a certain depth. The mechanism of puddle formation is explained by numerical analysis of a differential equation of heat conduction, which includes the amount of heat evolved by the absorbed solar radiation. (Auth.)

## 40-2329

Effect of roughness on the rate of ice accretion on a cylinder.

Makkonen, L., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.142-145, 10 refs.

## Stallabrass, J.R.

Icing, Ice accretion, Surface roughness, Boundary layer, Pipes (tubes), Heat transfer, Mathematical models, Tests, Ice loads.

## 40-2330

On the relationship of thermodynamic and physical properties of polymers with ice adhesion.

Murase, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.146-149, 12 refs.

## Nanishi, K.

Ice adhesion, Polymers, Shear strength, Hydrogen bonds.

## 40-2331

Ice formation and ice structure on Law Dome, Antarctica.

Xie, Z., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.150-153, 17 refs.

Ice crystals, Ice formation, Ice structure, Antarctica—Law Dome.

Studies of ice from two boreholes near Cape Folger show changes of microtexture and fabric of ice crystals with depth. Six different layers of ice can be identified: a deposition layer with polygonal shaped crystals, an ice fabric which is dependent on the ice formation process; a transition layer with porphyroblastic crystals and a girdle fabric pattern developing toward a two-pole fabric; a fine grained layer with cataclastic crystals and strong, nearly vertical single pole c-axis fabric; a coarse grained layer with large, interlocking, branched crystals and a diamond pattern of fabric; a second fine grained layer with a single max

imum fabric; a second coarse grained layer with multi-maxima fabric. The origin of the second fine grained layer, found in the ice of the last glaciation is discussed. It is suggested that this ice results from conditions during the last glaciation. (Auth. mod.)

## 40-2332

Energy exchange and its influence factors on mountain glaciers in West China.

Bai, Z., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.154-157, 5 refs.

## Yu, X.

Mountain glaciers, Heat transfer, Glacier ablation, Glacier surfaces, Climatic factors, Snow line, Solar radiation, China.

## 40-2333

Energy balance calculations for the ablation period 1982 at Vernagtferner, Oetzal Alps.

Escher-Vetter, H., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.158-160, 3 refs.

Glacier heat balance, Glacier ablation, Glacier melting, Radiation balance, Climatic factors, Runoff, Meltwater, Latent heat, Air temperature, Humidity, Wind factors.

## 40-2334

Temperature and accumulation of high altitude firn in the Alps.

Haeberli, W., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.161-163, 19 refs.

## Alcan, J.

Firn, Ice growth, Ice temperature, Mass balance, Heat transfer, Glacier flow, Carbon dioxide, Altitude, Temperature gradients, Wind erosion, Topographic effects, Alpine glaciation, Switzerland—Alps.

## 40-2335

Bidirectional reflectance of polar and alpine snow surfaces.

Kuhn, M., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.164-167, 8 refs.

Albedo, Reflectivity, Snow optics, Solar radiation, Antarctica.

The reflectance distribution of polar and alpine snow was measured under various conditions at 450, 514, 750 and 1,000 nm wavelength. A reflectance peak appears in the azimuth directions up to 60 deg to both sides of the solar azimuth, is more prominent at high zenith angles of incidence and of reflectance and is better developed in coarse than in fine-grained snow. Under natural conditions, when only hemispherical-directional reflectivity can be determined, the anisotropy is spread in the blue part of the spectrum where the diffuse component dominates global irradiance. Bidirectional reflectance of a laser beam at 514 nm over alpine snow is comparable to that at 1,000 nm over polar snow. (Auth.)

## 40-2336

Rate determining processes of sea ice growth.

Kuroda, T., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.168-170, 4 refs.

Ice growth, Sea ice, Heat transfer, Ice crystal growth, Thermal conductivity, Ice water interface, Ion diffusion, Mathematical models, Salt water, Latent heat.

## 40-2337

Oceanic heat flux as a component of the heat budget of sea ice.

Langleben, M.P., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.171-173, 7 refs.

Sea ice, Heat capacity, Ice cover effect, Ice salinity, Heat flux, Sea water, Ice cover thickness, Latent heat, Freezing.

## 40-2338

Heat balance at the snow surface in a katabatic wind zone, East Antarctica.

Ohata, T., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.174-177, 13 refs.

## Ishikawa, N., Kobayashi, S., Kawaguchi, S.

Heat balance, Wind factors, Snow thermal properties, Snow surface, Condensation, Antarctica—Mizuho Station.

Each component of the heat balance equation was obtained independently for 24 days in winter and 8 days in summer in 1980 at Mizuho Station. In winter, cloud amount and variations in the strength of katabatic wind were important factors determining the variation in heat balance components. Condensation of water vapor occurred in winter and sublimation in

summer, the latter had a significant effect on the heat balance. The small condensation may be due to the structure of the temperature inversion at Mizuho which is related to the katabatic wind. Results show that at Mizuho, the radiation loss is greater than at any other site on the continent excluding the coastal stations. (Auth. mod.)

## 40-2339

Heat exchange and surface conditions in North Water, northern Baffin Bay.

Steffen, K., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.178-181, 10 refs.

## Ohmura, A.

Heat transfer, Sea water, Ice cover effect, Remote sensing, Heat balance, Polyanya, Seasonal variations, Ice conditions, Arctic Ocean.

## 40-2340

Annual salt and energy budget beneath an antarctic fast ice cover.

Allison, I., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.182-186, 8 refs.

## Tivendale, C.M., Copson, G.R.

Meltwater, Ice melting, Ice salinity, Water temperature, Salt water, Ice cover effect, Sea ice, Heat balance, Ice cover thickness, Kista Strait.

Water temperature and salinity profiles were measured to a depth of 300 m below a fast ice cover near Mawson Station over a full annual cycle. Throughout the winter there is a net advection of salty water to the site which enhances the salinity increase in the water due to brine ejected from ice. After the ice reaches its maximum thickness there is considerable advection of warmer water which both raises the water temperature at the site and provides heat for the large oceanic heat flux previously reported for Mawson. The rate of this heat advection increases as the ice extent around Antarctica decreases. The ice partially melts *in situ* and breaks out in mid January. This effective removal of fresh water is balanced by a large influx of melt water from the continental ice sheet. The fresh water, initially near the surface, becomes well mixed to depths of greater than 200 m by strong storms in the ice free period from mid January to early April. (Auth. mod.)

## 40-2341

Ice front fluctuation in the eastern and southern Weddell Sea.

Lange, M.A., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.187-191, 17 refs.

## Kohnen, H.

Ice edge, Ablation, Ice shelves, Ice mechanics, Maps, Weddell Sea.

New data on the position of ice edges in the eastern and southern Weddell Sea for the years 1983 and 1984 are reported. The data are derived from ship-borne radar measurements of individual points along the ice edge together with ship's positions obtained by a satellite navigation system. They are accurate within 0.23 to 0.4 nm (426-741 m). Comparisons of ice shelf margins for the years 1980, 1983 and 1984 allow estimates of apparent ice advance rates during this period. Together with quantitative ice edge velocity estimates first conclusions about net changes along the ice front and the ablation along the margin of ice shelves in the eastern and southern Weddell Sea are derived. (Auth.)

## 40-2342

Movements of marginal pack ice off the Okhotsk Sea coast of Hokkaido.

Ono, N., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.192-194, 1 ref.

Pack ice, Ice edge, Remote sensing, Ice floes, Drift, Ice mechanics, Radar photography, LANDSAT, Okhotsk Sea.

## 40-2343

Arctic iceberg deterioration field study and model simulation.

Venkatesh, S., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.195-199, 14 refs.

## El-Tahan, M., Mitten, P.T.

Icebergs, Ice melting, Ice deterioration, Convection, Mass balance, Calving, Meteorological data, Oceanography, Profiles, Ocean waves, Aerial surveys, Stereophotography.

## 40-2344

On brine drainage channels of young sea ice.

Wakatsuchi, W., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.200-202, 6 refs.

## Saito, T.

Brines, Channels (waterways), Drainage, Young ice, Sea ice distribution, Ice growth, Ice cover thickness.

- 40-2345**  
Static dielectric constant as a textural index of snow. Denoth, A., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.203-206, 15 refs.  
Snow electrical properties, Snow recrystallization, Metamorphism (snow), Snow cover structure, Snow water content, Unfrozen water content, Dielectric properties, Grain size, Porosity.
- 40-2346**  
Snow stratigraphy measured by an active microwave system. Fujino, K., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.207-210, 4 refs.  
Snow stratigraphy, Microwaves, Snow physics, Remote sensing, Profiles, Electromagnetic prospecting, Spectra, Snow depth.
- 40-2347**  
Effect of snow distribution on gamma-ray survey of snow cover. Johnsrud, M., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.211-214, 6 refs.  
Snow cover distribution, Snow depth, Gamma irradiation, Topographic effects, Snowdrifts, Snow water equivalent, Models.
- 40-2348**  
Determination of the principal stresses of a snow cover on a mountain slope using snow pressure gauges. Ohizumi, M., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.215-217, 6 refs.  
Huzioka, T.  
Snow cover, Stresses, Slope orientation, Mountains, Compressive properties, Measuring instruments, Viscosity, Plasticity.
- 40-2349**  
Experimental study on direct shear strength of sea ice. Sacki, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.218-221.  
Ono, T., Niu, E.Z.  
Ice strength, Sea ice, Shear strength, Ice loads, Off-shore structures, Shear stress, Ice physics, Ice salinity, Porosity, Grain size, Internal friction.
- 40-2350**  
Morphological instability of polyhedral ice crystals growing in air at low temperature. Gonda, T., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.222-224, 16 refs.  
Gomi, H.  
Snow crystal structure, Snow crystal growth, Grain size, Polar regions, Low temperature tests, Atmospheric pressure.  
The morphology of snow crystals growing at a low temperature has been experimentally studied. The habit and the morphological instability of the crystals vary remarkably with air pressure. In addition, the morphological instability of the crystals depends not only on air pressure but also on supersaturation, crystal size, the ratio of growth rates and the ratio of axial lengths. It is supposed from the experimental results that long prisms with small skeletal structures forming at low supersaturation are precipitating in polar regions. Special reference is made to single snow crystals and diamond dust type ice crystals observed in Antarctica by other authors. (Auth. mod.)
- 40-2351**  
Ice accretion under natural and laboratory conditions. Itagaki, K., et al, *Annals of glaciology*, 1985, Vol.6, MP 2009, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.225-228, 13 refs.  
Lemieux, G.E., Bosworth, H.W.  
Aircraft icing, Ice accretion, Wind tunnels, Unfrozen water content, Temperature factors, Humidity, Propellers.  
To compare results of icing studies conducted in wind tunnels with natural icing conditions, a series of rotor icing studies were made on top of Mt. Washington, New Hampshire. The results indicated that considerable differences exist between the two under conditions of similar liquid water content and temperature. The wet-to-dry growth transition temperature, for instance, with comparable temperature and liquid water content, may be more than 10°C higher under natural conditions than in wind tunnel studies. The possible cause of such discrepancies was found to be the vapor saturation existing in most laboratory experiments. The transition temperature of ice accretion measured in natural fog on board an aircraft agreed better with the results of the Mt. Washington study.
- 40-2352**  
Katabatic snow storms in stable atmospheric conditions at Mizuho Station, Antarctica. Kobayashi, S., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.229-231, 12 refs.  
Ishikawa, N., Ohata, T.  
Snowfall, Snowstorms, Blowing snow, Snowdrifts, Wind factors, Antarctica—Mizuho Station.  
This paper describes the results of snow drift measurements made on a strong katabatic wind slope at Mizuho Station, 2230 m above mean sea level. From the vertical profile of the mass flux of blowing snow up to 28 m above the snow surface under conditions of snow fall, the snow fall densities have been estimated as asymptotes of the profile. Snow fall densities as asymptotes were estimated between 1 and 80 mg/cu m. Assuming a fall velocity of blowing snow particles as 0.5 m/s, above values correspond to values of the vertical flux of snow fall between 2 micron and 0.1 mm. (Auth.)
- 40-2353**  
Formation mechanisms of snow crystals at low temperature. Sato, N., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.232-234, 8 refs.  
Kikuchi, K.  
Ice crystal growth, Low temperature research, Snow crystal structure, Cold chambers.  
Different kinds of peculiar shapes of snow crystals, that have been discovered in the Antarctic, are discussed. To study crystal shapes, and formation and growth mechanisms of snow crystals formed below -20°C, a new type of diffusion chamber was constructed. Using this chamber, different kinds of peculiar shaped crystals previously observed in nature have been produced together with normal types of snow crystals. Gohei twins, one of the most typical polycrystalline shapes in nature have been produced artificially. The vapor pressure was at or near water saturation at the time of nucleation. Analysis of photomicrographs and replicas of Gohei twins that were replicated in the polar regions show that the number frequency of the tip angle has a maximum frequency at about 77 deg and a minor one at about 54 deg. On the basis of these results, a formation mechanism for some Gohei twins is proposed in this paper. (Auth.)
- 40-2354**  
Thermal modification of air moving over melting snow surfaces. Takahara, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.235-237, 6 refs.  
Higuchi, K.  
Snow melting, Air flow, Thermal effects, Heat transfer, Cooling, Heat flux, Temperature factors, Solar radiation, Humidity, Wind velocity, Air temperature, Boundary layer.
- 40-2355**  
Effects of drifting snow on surface radiation budget in the katabatic wind zone, Antarctica. Yamanouchi, T., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.238-241, 14 refs.  
Kawaguchi, S.  
Radiation, Snowdrifts, Blowing snow, Snow depth, Wind factors, Antarctica—Mizuho Station.  
Effects of drifting snow are examined from measurements of radiation fluxes at Mizuho Station in the katabatic wind zone. A good correlation is found between the difference of downward longwave fluxes measured at two heights and wind speed used as an index of drifting snow. The wind increases the downward flux at a rate of 2 W sq m/s when wind speed is higher than 13 m/s. Drifting snow suppresses the net longwave cooling at the surface. Direct solar radiation is depleted greatly by the drifting snow. At Mizuho Station, the effect on longwave radiation prevails throughout the year. The relation between snow drift content and wind speed is obtained from shortwave optical depth measurements as a function of wind speed. A simple parameterization of radiative properties is given. (Auth.)
- 40-2356**  
Comparison of ice crystals grown from vapour in varying conditions. Yamashita, A., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.242-245, 7 refs.  
Asano, A., Ohno, T.  
Ice crystal growth, Supercooled clouds, Ice crystal structure, Air flow, Temperature factors, Dendritic ice.
- 40-2357**  
Calorimeter for measuring free water content of wet snow. Akitaya, E., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.246-247, 2 refs.  
Wet snow, Calorimeters, Water content, Analysis (mathematics), Accuracy, Measuring instruments.
- 40-2358**  
Ice avalanche activity and mass balance of a high-altitude hanging glacier in the Swiss Alps. Alean, J., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.248-249, 5 refs.  
Glacier ablation, Ice mechanics, Avalanche formation, Glacier mass balance, Altitude, Ice volume, Mountain glaciers, Switzerland—Alps.
- 40-2359**  
Remote sensing of snow in high mountain basins in Norway. Andersen, T., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.250-251, 6 refs.  
Haakensen, N.  
Snow surveys, Snow cover distribution, Remote sensing, Snow accumulation, River flow, Mapping, Mountains, Flood forecasting, Electric power, Norway.
- 40-2360**  
Detection of an ice-forming area by radar and satellite. Aota, M., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.252-253, 1 ref.  
Oi, M., Ishikawa, M., Fukushima, H.  
Ice detection, Pack ice, Sea ice distribution, Radar echoes, Remote sensing, Ice cover thickness, Spacecraft, Air temperature, Snow surface temperature, Infrared mapping.
- 40-2361**  
Measurements of daily variations in the subsurface wetness gradient. Denoth, A., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.254-255, 6 refs.  
Foglar, A.  
Snow water content, Unfrozen water content, Snow surface, Dielectric properties, Diurnal variations, Profiles.
- 40-2362**  
Release mechanisms of an avalanche on a slope covered with bamboo bushes. Endo, Y., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.256-257, 3 refs.  
Snow cover, Avalanche mechanics, Snow slides, Slope orientation, Snow fences, Friction, Stresses, Vegetation, Velocity, Analysis (mathematics).
- 40-2363**  
Fluctuations of sedimentary environments of the Gyafo Glacier, Khumbu Region, East Nepal. Fushimi, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.258-260, 6 refs.  
Kamiyama, K., Kitaoka, K., Ikegami, K.  
Glacial deposits, Snow stratigraphy, Sediment transport, Radioactive age determination, Mountain glaciers, Nepal—Gyafo Glacier.
- 40-2364**  
Effects of precipitation on the isotopic composition of falling snow particles. Higuchi, K., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.261-262, 3 refs.  
Tokuoka, A., Watanabe, O.  
Snowfall, Isotope analysis, Snow composition, Precipitation (meteorology), Snow pellets, Oxygen isotopes, Air temperature.

40-2365

Transition in preferred orientation of polycrystalline ice from repeated crystallization.

Huang, M., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.263-264, 6 refs.

Ohtomo, M., Wakahama, G. Ice crystal structure, Recrystallization, Compressive properties, Glacier ice, Glacier flow, Experimentation.

40-2366

Visibility in blowing snow observed by the luminance contrast.

Ishimoto, K., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.265-266, 3 refs.

Fukuzawa, Y.

Blowing snow, Visibility, Luminance, Transmissivity, Cloud cover.

40-2367

Hardness of wet snow.

Izumi, K., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.267-268, 4 refs.

Akitaya, E.

Wet snow, Snow hardness, Snow mechanics, Snow water content, Experimentation.

40-2368

Structure and falling motion of early snow flakes.

Kajikawa, M., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.269-271, 7 refs.

Snowflakes, Snow crystal structure, Snow crystal growth, Falling bodies, Dynamic properties, Dendritic ice.

40-2369

Macropores in snowpacks of Sierra Nevada.

Kattelmann, R., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.272-273, 7 refs.

Snow cover structure, Porosity, Drainage, Stream flow, Meltwater, Channels (waterways), Grain size.

40-2370

Movement of grain boundary of sea ice.

Kawamura, T., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.274-275, 5 refs.

Ice growth, Ice crystal structure, Sea ice, Boundary layer, Ice salinity, Grain size, Experimentation.

40-2371

Melting and heat exchange at the bottom of a snow cover.

Kojima, K., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.276-277, 3 refs.

Motoyama, H.

Snow melting, Heat transfer, Snow cover, Heat flux, Subglacial observations, Interfaces, Ground temperature.

40-2372

Mechanical properties of first year sea ice in Saroma Lagoon.

Matsushita, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.278-280, 12 refs.

Yashima, N.

Ice mechanics, Sea ice, Young ice, Ice strength, Compressive properties, Temperature effects, Ice loads, Air temperature, Offshore structures.

40-2373

Development of an automatic ice fabric analyzer.

Mori, Y., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.281-283, 2 refs.

HonJoh, T., Higashi, A.

Ice crystal structure, X ray diffraction, Accuracy, Ice crystal optics.

40-2374

Measurement of settlement forces on horizontal beams buried in snow.

Nakamura, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.284-286, 7 refs.

Abe, O.

Snow compression, Settlement (structural), Snow loads, Snow physics, Loads (forces), Snow depth, Beams (supports).

40-2375

Structural characteristics of snow drifts and cornices.

Naruse, R., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.287-288, 5 refs.

Nishimura, H., Maeno, N.

Snowdrifts, Snow cover structure, Snow cornices, Snow pellets, Snowfall, Mass balance, Snow cover distribution, Grain size, Snow density, Snow hardness, Models.

40-2376

Internal radio-echo reflections of polar snow cover in relation to acidic layers and density fluctuations.

Nishio, F., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.289-291, 6 refs.

Ohmae, H.

Firn, Ice cores, Snow density, Snow impurities, Radio echo soundings, Electrical resistivity, Snow cover, Polar regions, South Sandwich Islands.

To confirm radio-echo layering due to changes in density variations and in specific conductivity in the amount of acid impurities, radio-echo sounding surveys with impulse radar technique were carried out. The continuous and strong internal layers of the snow covers were found to give good correlation with strong peaks of specific conductivity of melted samples from ice cores rather than the differences in density fluctuations between depositional layers. Measured high conductivity due to acidity variations in ice cores may be correlated with recent volcanic eruptions in the Northern Hemisphere, and in the Scotia Arc and the South Sandwich Islands. (Auth.)

40-2377

Mechanical instability of snow cover with saturated layer.

Nohguchi, Y., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.292-294, 7 refs.

Snow cover stability, Snow mechanics, Saturation, Snow density, Snow surface, Analysis (mathematics), Rain.

40-2378

Thickness and structure of Antarctic sea ice measured by drilling and impulse radar.

Ohmae, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.295-297, 3 refs.

Nishio, F.

Brines, Radar echoes, Sea ice, Ice physics, Electromagnetic properties, Ice structure, Ice salinity, Antarctica—Showa Station.

Ice cores 155 cm long were drilled for analysis of their internal structure, which showed that a brine-soaked layer existed at the depth of 90 cm. This layer corresponded to an internal echo of very strong intensity. It is concluded that two types of sea ice covers the area near Showa Station: one with a brine-soaked layer; the other without. Irregularities in shape of the bottom echo suggest that the sea ice plane is composed of accumulated small plates of sea ice. (Auth. mod.)

40-2379

Surface layer salinity of young sea ice.

Ono, N., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.298-299, 2 refs.

Kasai, T.

Ice salinity, Young ice, Ice temperature, Loads (forces), Brines, Permeability, Surface temperature, Sea water.

40-2380

Net accumulation and oxygen isotope composition of snow on Mizuho Plateau, Antarctica.

Satow, K., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.300-302, 7 refs.

Watanabe, O.

Models, Depth hoar, Snow accumulation, Metamorphism (snow), Oxygen isotopes, Snow composition, Snow temperature, Antarctica—Mizuho Plateau.

Variation of annual net snow accumulation was determined, at Mizuho Plateau from 1914 to 1981, by the analysis of a 30 m core bored in a high accumulation zone. Power spectral analysis of the annual accumulations shows two predominant periodicities, one of 45 years, and the other of 18 years. With small accumulation and strong temperature gradient at the surface, developments of depth hoar and the metamorphism of oxygen isotope composition (delta O-18) profile of snow take place near the snow surface. From experimental results, the authors propose some models of the metamorphism of delta O-18 profile of snow with temperature gradient. These models can be divided into two groups: one where a cap, such as an ice crust, is present, and the other without. (Auth.)

40-2381

Measurement of strains and pressure in snow cover on a slope.

Shimizu, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.303-304, 2 refs.

Akitaya, E., Oh'izumi, M., Hirabayashi, Y.

Snow cover, Strains, Pressure, Slope orientation, Snow physics, Measuring instruments, Stresses.

40-2382

Comparison of mechanical tests on the Dye-3, Greenland ice core and artificial laboratory ice.

Shoji, H., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.305, 6 refs.

Langway, C.C.

Ice cores, Ice mechanics, Flow rate, Strains, Compressive properties, Shear flow, Ice impurities, Chemical analysis, Velocity.

40-2383

Sensing of snow-pack melting by active microwave system with fixed frequency.

Suzuki, M., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.306-308, 2 refs.

Snow melting, Microwaves, Snow depth, Snow temperature, Wave propagation, Snow surface, Detection, Experimentation, Diurnal variations.

40-2384

Salination of snow on sea ice and formation of snow ice.

Takizawa, T., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.309-310, 5 refs.

Snow ice, Snow composition, Chemical analysis, Salinity, Sea ice, Ice formation, Snow ice interface, Fast ice, Wet snow, Slush.

40-2385

Light attenuation and visibility in blowing snow.

Takeuchi, M., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.311-313, 6 refs.

Fukuzawa, Y.

Blowing snow, Visibility, Light transmission, Attenuation, Measuring instruments, Particles, Distribution, Snowfall, Mass transfer.

40-2386

Mechanism of formation of radially-grown melt patterns on the surface of ice.

Toukairin, A., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.314-315, 4 refs.

Ice melting, Ice surface, Lake ice, Artificial melting.

40-2387

Ablation rates on the ceiling of a snow tunnel over a stream.

Uematsu, T., *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.316-317, 4 refs.

Snow tunnels, Ablation, Heat transfer, Streams, Heat flux, Snow cover, Analysis (mathematics).

40-2388

Mass balance study of a glacier system from hydrological observations in Langtang Valley, Nepal Himalaya.

Yamada, T., et al, *Annals of glaciology*, 1985, Vol.6, Symposium on Snow and Ice Processes at the Earth's Surface, Sapporo, Japan, Sep. 2-7, 1984. Proceedings, p.318-320, 7 refs.

Motoyama, H., Thapa, K.B.

Glacier mass balance, Glacial hydrology, Rivers, Watersheds, Seasonal variations, Glacier ablation, Glacier alimentation, Degree days, Precipitation (meteorology), Himalaya Mountains.

40-2389

**Proceedings.**

Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984, *Annals of glaciology*, 1985, Vol.7, 215p., Refs. passim. For individual papers see 40-2390 through 40-2423, or E-33313, F-33308 through F-33324 (with gaps), I-33310, I-33320, and I-33322.

**Snow composition, Ice composition, Isotope analysis, Chemical analysis, Ions, Meetings, Meltwater.**

The Symposium was held at Peterborough, Ontario, from Aug. 19 to 24, 1984. The papers include materials from the Arctic and Antarctic and cover subjects on snow surveys, ice surveys and the atmosphere.

40-2390

**Glaciochemical studies and estimated net mass balances for Rennick Glacier area, Antarctica.** Boyd, A., III, et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.1-6, 24 refs.

**Snow composition, Ice composition, Mass balance, Antarctica—Rennick Glacier.**

Two snow and ice cores from the Rennick Glacier area were analyzed for the chemical species: chloride, sodium, reactive silicate, sulfate and nitrate. Core E10 (6.35 m) was taken from Evans Névé. Core M1 (4.35 m) was extracted from the accumulation zone on the central plateau of the Morozumi Range. Cores E10 and M1 span the time periods from 1929 to 1981 and from 1971 to 1981, respectively, as dated using seasonal variations in chloride (E10) and sulfate (M1) concentrations. An estimated net balance of 50 kg/sq m/a was derived for site E10 and of 182 kg/sq m/a for site M1. The difference in net mass balance is explained by elevational differences. Recent increases in sodium, silicate and sulfate at site E10 is linked to decreases in antarctic pack-ice extent for the same period. (Auth.)

40-2391

**Assessing laboratory procedures for the decontamination of polar snow or ice samples for the analysis of toxic metals and metalloids.**

Boutron, C.F., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.7-11, 25 refs.

**Chemical analysis, Snow composition, Impurities, Ice composition, Polar regions, Antarctica.**

Most polar snow and ice samples to be analyzed for toxic metals and metalloids such as Pb, Hg, Sb, Cd, Ag, Se, As, Cu and Zn become more or less contaminated by these elements on their outcrops, mainly during field collection. Assessed here are the various procedures which have been developed to try to decontaminate the samples. They include both mechanical and rinsing techniques. The efficiency of the procedures is established by determining the geometry of contamination of the analyzed samples and by evaluating procedural blanks carefully. Such careful evaluation has been achieved only for mechanical procedures and for a few metals. (Auth.)

40-2392

**Trace elements in antarctic air and snowfall.**

Dick, A.L., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.12-19, 23 refs.

Peel, D.A.

**Aerosols, Chemical analysis, Snow impurities, Snow composition, Snowfall, Antarctica—Antarctic Peninsula.**

Trace-element concentrations have been measured on samples of aerosol and freshly fallen snow collected simultaneously from two sites in the Antarctic Peninsula during summer. Following improvements in contamination control, the reported concentrations and crustal enrichment factors of Cd, Cu, Pb and Zn in the aerosol are lower than any values previously reported from Antarctica. Even tighter controls will be required in the future. For a crustal element (Al) and for the marine cations (Na, Ca and K) a consistent ratio for the concentration in air/concentration in snow is obtained for simultaneously collected samples. This supports a simple model of aerosol scavenging proposed by Junge which considers aerosol removal over polar ice sheets to be dominated by in-cloud processes. Averaged data for Cd, Cu, Pb and Zn from samples collected at different times appear to behave similarly. These findings suggest that there is no preferential scavenging by snowfall of either crustal or heavy metal components in contemporary aerosol. (Auth.)

40-2393

**Spatial and temporal variations of snow chemistry in Terre Adélie (East Antarctica).**

Legrand, M., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.20-25, 18 refs.

Delmas, R.J.

**Snow composition, Snow impurities, Chemical analysis, Antarctica—East Antarctica.**

The chemistry of recently deposited snow sampled in 1982-83 along a 430 km coast-interior traverse in Terre Adélie is reported.

ed. In addition, three firm samples, covering the same time period (1959 to 1969) and collected on the traverse at D 55, D 80 and Dome C stations, respectively at 200, 430 and 1070 km from the sea, are also studied. Concentrations of major soluble impurities were determined on more than 200 samples. Conditions of sampling and analysis were carefully controlled in order to avoid contamination problems. A balanced ionic budget was generally obtained for each of the samples. For stations occupying an intermediary position between the coastal areas and the central Antarctic Plateau, results demonstrate that the two major impurities are H<sub>2</sub>SO<sub>4</sub> and HNO<sub>3</sub>. HCl is also present, but at a lower level of concentration; the sea-salt contribution is dominant only at the most coastal sites. (Auth. mod.)

40-2394

**Snow stratigraphic record at South Pole: potential for paleoclimatic reconstruction.**

Mosley-Thompson, E., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.26-33, 28 refs.

**Snow composition, Paleoclimatology, Snow stratigraphy, Radioactivity, Antarctica—Amundsen-Scott Station.**

An extensive investigation of the visible stratigraphy, microparticle concentration, liquid conductivity, oxygen isotopes and beta-radioactivity was conducted in pits excavated at Amundsen-Scott Station. The objectives of the investigation were to assess the spatial representativeness of the geochemical and physical records preserved within the snow strata and to ascertain the temporal resolution which can be obtained from such ice-core records. Accurate interpretation of the time scale and reconstruction of climatic conditions from these time series requires the analysis of as many stratigraphic parameters as possible, and the synthesis of data from a suite of cores in the study area. For periods of 10 a or less, regionally representative accumulation rates cannot be obtained from annual accumulation time series reconstructed at a single site. Although the microparticle concentrations, liquid conductivity and oxygen isotopic abundances all exhibit a seasonal cycle in the firm, the construction of an accurate time scale requires all three parameters in conjunction with the beta-radioactivity. (Auth. mod.)

40-2395

**Volcanic ash layers in bare ice areas near the Yamato Mountains, Dronning Maud Land and the Allan Hills, Victoria Land, Antarctica.**

Nishio, F., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.34-41, 29 refs.

Katsushima, T., Ohmachi, H.

**Ice sheets, Volcanic ash, Antarctica—Queen Maud Land, Antarctica—Victoria Land.**

Dirt layers of tephra were found on the bare ice surface in the Meteorite Ice Field near the Yamato Mountains and near the Allan Hills. The grain-size analyses of volcanic ash fragments show that the mean grain size in the Allan Hills region is larger than that in the Yamato Mountains region. Their constituent fragments are well-sorted and composed mainly of volcanic glass shards with minor amounts of crystal fragments. A young volcano of the McMurdo volcanic group is suggested as a possible source of this tephra. Glass shards of the tephra from the Yamato Mountains region have a composition of tholeiitic andesite which is low in alkali and high in iron but not so enriched in titanium, and the associated crystal fragments consist of calcic plagioclase, subcalcic clinopyroxene, orthopyroxene and magnetite. The nature of island arc tholeiite of the tephra indicates that its source is some volcano in the South Sandwich Islands. (Auth. mod.)

40-2396

**Particle morphology, composition and associated ice chemistry of tephra layers in the Byrd ice core: evidence for hydrovolcanic eruptions.**

Palais, J.M., *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.42-48, 30 refs.

**Paleoclimatology, Volcanic ash, Ice composition, Dust, Antarctica—Byrd Station.**

In 1968 an ice core 2164 m long was recovered from Byrd Station. About 2000 tephra layers were observed in the core and have been differentiated into ash and dust bands according to the grain size and concentration of particles in the layers. Mount Takah, a local volcano in Marie Byrd Land, is the probable source. Detailed examinations of the particle morphology, composition and ice chemistry associated with some of the tephra layers have led to the conclusion that the eruptions which produced the layers were probably hydrovolcanic. Melted glacier ice is considered the most likely source of the water involved in the eruptions. Processes associated with hydrovolcanism, such as particle aggregation, rapid conversion of sulfur dioxide to sulfuric acid, and scavenging of acid droplets by the fine dust particles, are inferred to have taken place. Such processes would greatly reduce the atmospheric residence time of the eruptive products and thus their atmospheric and climatic impact. (Auth. mod.)

40-2397

**Investigations of the oxygen-18 content of samples from snow pits and ice cores from the Filchner-Ronne ice shelves and Ekström ice shelf.**

Reinwarth, O., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.49-53, 10 refs.

**Ice shelves, Oxygen isotopes, Isotope analysis, Snow accumulation, Ice composition, Snow composition, Snow stratigraphy, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf, Antarctica—Ekström Ice Shelf.**

The investigations of snow pits on the Filchner-Ronne ice shelves yield a standard deviation for the annual average delta O-18 values of approximately 1 per mill over the last five years, and a decrease of delta O-18 with distance from the ice edge of about 1 per mill per 50 km. The variation of delta O-18 for stratigraphically matching snow layers from snow pits at the same location in different years is about 0.3 per mill on the Filchner-Ronne ice shelves, and 0.8 per mill at Georg-von-Neumayer station. The mean annual accumulation rate in the surroundings of Georg-von-Neumayer station was determined to be 34 g/sq cm for the years 1977-81. On the Filchner-Ronne ice shelves the mean annual accumulation rate (1979-83) decreases from 22 g/sq cm at Filchner station to 15 g/sq cm at traverse point T340, located 200 km southeast of Filchner station. (Auth. mod.)

40-2398

**Gaseous components in the atmosphere and the historic record revealed by ice cores.**

Stauffer, B., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.54-59, 29 refs.

Oeschger, H.

**Bubbles, Ice cores, Ice composition, Carbon dioxide, Atmospheric composition, Polar regions, Antarctica.**

Analyses of ice samples representing the past 40 ka show that there were significant changes in concentration of atmospheric CO<sub>2</sub> at the end, and probably during part, of the last glaciation. Delta C-13 measurements on CO<sub>2</sub> extracted from ice cores can indicate possible mechanisms causing these changes in the concentration of atmospheric CO<sub>2</sub>. (Auth. mod.)

40-2399

**Closer to a true value for heavy metal concentrations in recent antarctic snow by improved contamination control.**

Wolff, E.W., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.61-69, 27 refs.

Peel, D.A.

**Ice cores, Chemical analysis, Snow composition, Snow impurities, Ice composition, Polar regions, Antarctica—Antarctic Peninsula.**

Recent snow from two sites in the Antarctic Peninsula has been analyzed for Al, Cd, Cu, Pb and Zn. Measurement of full procedural blanks and of the extent of penetration of surface contamination has allowed a rigorous appraisal of both sampling and analytical methods. Whilst the particular samples of cored firm used here have been shown to be unsuitable due to penetration of surface contamination into their interiors, surface samples collected directly into acrylic tubes showed very limited penetration of contamination. The average concentrations of surface samples are given; the values for Cd, Cu and Zn are about ten times lower than have been reported previously, even for ancient antarctic ice. For concentrations of Cd, Cu, Pb and Zn in ancient antarctic ice, the following limits are suggested for increases over natural background levels due to anthropogenic emissions: Pb 1 to 40 times, Cd 1 to 180 times, Cu 1 to 4.5 times and Zn 1 to 6 times. (Auth. mod.)

40-2400

**Sulphuric and nitric acid concentrations and spikes along a 200 m deep ice core at D57 (Terre Adélie, Antarctica).**

Zanolini, F., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.70-75, 20 refs.

Delmas, R.J., Legrand, M.

**Ice cores, Ice dating, Ice composition, Antarctica—Adélie Coast.**

D57 station in Terre Adélie lies between the coast and the central Antarctic Plateau. A 200 m ice core was recovered in summer 1980-81 at this location and analyzed by an electroconductometric method. Acid levels, linked to fallout from major volcanic eruptions, were found; in particular, two eruptions identified as Tambora (1815) and Galunggung (1822). The background concentration of sulphate was found to be relatively low. The nitrate values were higher than at coastal or central antarctic locations (except for the South Pole). Two spikes were found in the nitrate profile at depths of 140 and 148 m. With the aid of these sulphate and nitrate exceptional events, a dating of the D57 ice core can now be proposed which corresponds to a mean snow accumulation rate of 22 cm of ice equivalent per year over the last four centuries. (Auth. mod.)

- 40-2401**  
Stratigraphic noise in time series derived from ice cores.  
Fisher, D.A., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.76-83, 13 refs.
- Reeh, N., Clausen, H.B.  
Ice dating, Ice cores, Snowdrifts, Firn, Oxygen isotopes, Noise (sound), Models, Snow depth, Spectra.
- 40-2402**  
Glaciochemistry of snow-pits from Quelccaya ice cap, Peru, 1982.  
Lyons, W.B., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.84-88, 24 refs.
- Mayewski, P.A., Thompson, L.G., Allen, B., III.  
Snow composition, Chemical analysis, Drill core analysis, Ions, Spectroscopy, Climatic factors, Mountains, Photometry, Peru—Andes.
- 40-2403**  
Isotope studies of ice cores from a temperate Alpine glacier (Vernagtferner, Austria) with respect to the meltwater flow.  
Oerter, H., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.90-93, 9 refs.
- Baker, D., Stichler, W., Rauert, W.  
Glacier ice, Ice cores, Isotope analysis, Electrical resistivity, Meltwater, Water flow, Boreholes, Water table, Firn, Profiles, Mountain glaciers, Austria—Vernagtferner.
- 40-2404**  
Applications of isotope geochemistry to research on Chinese glaciers.  
Wang, P., *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.94-99, 9 refs.
- Mountain glaciers, Ice composition, Isotope analysis, Geochemistry, Glacial hydrology, Snow composition, Runoff, Meltwater, China.
- 40-2405**  
Atmospheric particles: their physical and chemical characteristics, and deposition processes relevant to the chemical composition of glaciers.  
Barrie, L.A., *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.100-108, Refs. p.107-108.
- Aerosols, Atmospheric composition, Ice composition, Snow impurities, Snowfall, Polar regions, Antarctica—Amundsen-Scott Station.
- It is estimated that man's contribution to the total particle mass loading of the atmosphere ranges from 5 to 48%, appearing initially in the form of gases, then converting to particles while being transported to glacial receptors where they are incorporated into snow. The complex physical and chemical processes involved in the deposition of atmospheric particles to glaciers are reviewed. Both wet and dry deposition contribute to the pollutant loading of a snowfield. However, except in the case of low snowfall (<60 kg/sq m/a) or exceptionally large particle sizes, such as might be released by volcanoes or when unfired snowfall predominates, wet deposition is dominant. (Auth. mod.)
- 40-2406**  
Airborne pollen: a unique air mass tracer, its influx to the Canadian High Arctic.  
Bourgeois, J.C., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.109-116, 22 refs.
- Koerner, R.M., Alt, B.T.  
Ice composition, Snow composition, Pollen, Distribution, Wind factors, Palynology, Forest lines, Polar regions, Canada.
- 40-2407**  
Global oxygen isotope model—semi-empirical, zonally averaged.  
Fisher, D.A., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.117-124, Refs. p.123-124.
- Alt, B.T.  
Sea ice, Ice cores, Water vapor, Oxygen isotopes, Atmospheric composition, Precipitation (meteorology).
- A simple model, which is zonally averaged, for the transport of atmospheric water vapor is presented which uses as input the zonally averaged evaporation field and the mean meridional travel distance of tropospheric water vapor as functions of latitude. The model demonstrates that for polar regions each of the 10 deg latitude strips poleward of 25 deg is of equal importance as a moisture source. The model is used to predict zonal averages of delta O-18 for the present day and 18 ka BP. Both annual average values and seasonal amplitudes are presented and compared to observations. Sea-ice cover is an important factor in determining both annual averages and seasonal amplitudes today and at 18 ka BP. An earlier model linking delta O-18, the deuterium excess, and sea-salt content in an antarctic ice core to the relative humidity of the source region is based on a single source atmospheric water-vapor cycle type model and is re-evaluated using the present model. (Auth.)
- 40-2408**  
Influence on atmospheric composition of volcanic eruptions as derived from ice-core analysis.  
Hammer, C.U., *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.125-129, 24 refs.
- Ice cores, Impurities, Ice composition, Ice dating.  
Polar ice cores offer datable past snow deposits in the form of annual ice layers, which reflect the past atmospheric composition. Trace substances in the cores are related to the past mid-tropospheric impurity load, this being due to the vast extent of the polar ice sheets (or ice caps), their surface elevations and remoteness from most aerosol sources. Volcanic eruptions add to the rather low background impurity load via their eruptive products. This paper concentrates on the widespread influence on atmospheric impurity loads caused by the acid gas products from volcanic eruptions. In particular the following subjects are discussed: acid volcanic signals in ice cores, latitude of eruptions as derived by ice-core analysis, inter-hemispheric dating of the two polar ice sheets by equatorial eruptions, volcanic deposits in ice cores during the last glacial period and climatic implications. (Auth.)
- 40-2409**  
Simulation of airborne impurity cycles using atmospheric general circulation models.  
Joussau, S., *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.131-137, 26 refs.
- Ice composition, Dust, Atmospheric composition, Impurities, Atmospheric circulation, Models.  
Atmospheric general circulation models are believed to be appropriate tools for studying airborne impurity cycles. Some results from a first simulation including desert dust and water isotope cycles are presented and compared to observations, with particular emphasis on ice-sheet data. In western Antarctica, Australian and South American dust dominate by an order of magnitude. In central Antarctica, dust originating either from Australia or South Africa is four times smaller than South American dust, whereas in eastern Antarctica, Australian dust dominates by a factor of three.
- 40-2410**  
Be-10 in polar ice and atmospheres.  
Raisbeck, G.M., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.138-140, 14 refs.
- Yiou, F.  
Ice cores, Ice dating, Ice composition, Aerosols.  
Reviewed is the application of cosmogenic Be-10 measurements in ice and polar atmospheres to the dating of ice cores, the deduction of past accumulation rates, information on the influx of stratospheric aerosols in polar regions, and the mechanism of incorporation of aerosols into the ice. It is found that at high latitudes (>74 deg), the Be-10 deposition rate in the ice is more constant than the Be-10 concentration. (Auth.)
- 40-2411**  
Relocation and preferential elution of acidic solute through the snowpack of a small, remote, high-altitude Scottish catchment.  
Brimblecombe, P., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.141-147, 12 refs.
- Snow composition, Ions, Snowmelt, Chemical analysis, Meltwater, Ablation, Drill core analysis.
- 40-2412**  
Distribution of grain sizes and internal surface area and their role in snow chemistry in a sub-Arctic snow cover.  
Granberg, H.B., *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.149-152, 5 refs.
- Snow composition, Chemical analysis, Grain size, Snow cover, Particle size distribution, Surface properties.
- 40-2413**  
Acid content of snow from a mid-troposphere sampling site on Mount Logan, Yukon Territory, Canada.  
Holdsworth, G., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.153-160, 28 refs.
- Peake, E.  
Snow composition, Ice composition, Chemical analysis, Firn, Ice formation, Ions, Ice cores, Precipitation (meteorology), Climatic factors, Electrical resistivity, Volcanic ash, Canada—Yukon Territory—Logan Mountain.
- 40-2414**  
Chemistry of snow and meltwaters within the mesostructure of a boreal forest snow cover.  
Jones, H.G., *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.161-166, 12 refs.
- Snow composition, Meltwater, Snow cover structure, Chemical analysis, Forest canopy, Oxygen isotopes, Ions, Rain, Runoff.
- 40-2415**  
Chemical characteristics of snow cover in a northern boreal forest during the spring run-off period.  
Jones, H.G., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.167-174, 25 refs.
- Sochanska, W.  
Snow composition, Chemical analysis, Ions, Snow cover, Forest canopy, Runoff, Drill core analysis, Precipitation (meteorology).
- 40-2416**  
Sulphur and heavy metal pollution in urban snow: multi-elemental analytical techniques and interpretations.  
Landsberger, S., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.175-180, 39 refs.
- Jervis, R.E.  
Snow composition, Chemical analysis, Pollution, Environmental impact, Detection, Human factors.
- 40-2417**  
Hydrometeorological interpretation of isotopic data on atmospheric moisture and precipitation.  
Saxena, R.K., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.181-184, 6 refs.
- Eriksson, E.  
Humidity, Precipitation (meteorology), Freezing, Isotope analysis, Oxygen isotopes, Water vapor, Cold chambers, Molecular structure.
- 40-2418**  
Spatial and temporal variability of surface snowfall and snowpack chemistry in central Ontario.  
Schemenauer, R.S., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.185-190, 3 refs.
- Summers, P.W., Wiebe, H.A., Anlauf, K.G.  
Snowfall, Snow cover distribution, Snow composition, Ions, Snow cover structure, Snow physics, Climatic factors, Canada—Ontario.
- 40-2419**  
Study of atmospheric deposition onto the snowpack in northern Saskatchewan.  
Shewchuk, S.R., *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.191-195, 10 refs.
- Ions, Snow composition, Chemical analysis, Precipitation (meteorology), Snow cover, Snow surveys, Snowmelt, Water chemistry, Air temperature, Canada—Saskatchewan.
- 40-2420**  
Elution of ions through field and laboratory snowpacks.  
Tsiouris, S., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.196-201, 11 refs.
- Vincent, C.E., Davies, T.D., Brimblecombe, P.  
Snow composition, Ions, Meltwater, Chemical analysis, Snowmelt, Experimentation.

40-2421

Roles of snow, lake ice and lake water in the distribution of major ions in the ice cover of a lake.

Adams, W.P., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.202-207, 15 refs.

Lasenby, D.C.

Lake ice, Ice composition, Ions, Snow cover effect, Ice cover thickness, Lake water, Snow depth, Ice growth, Colored ice, Electrical resistivity.

40-2422

Effects of ice and snow cover on the chemistry of nearshore lake water during spring melt.

Gunn, J.M., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.208-212, 21 refs.

Keller, W.

Lake water, Water chemistry, Snow cover effect, Ice cover effect, Meltwater, Snowmelt, Ice melting, Run-off.

40-2423

Byrd ice core: continuous acidity measurements and solid electrical conductivity measurements.

Hammer, C.U., et al, *Annals of glaciology*, 1985, Vol.7, Symposium on Snow and Ice Chemistry and the Atmosphere, Peterborough, Ontario, Aug. 19-24, 1984. Proceedings, p.214.

Clausen, H.B., Langway, C.C., Jr.

Ice cores, Ice dating, Ice composition.

Preliminary results of the project are as follows: dating of the Byrd core; evidence of accumulation rates 2.5 times lower than present from 30 to 18 ka BP, increasing towards present values from 18 to 11 ka BP; detection of some 20 to 30 major volcanic eruptions which strongly increased ice acidity; and discovery of a major volcanic event. One of the signals shows an eruptive period of some 150 a with tremendous volcanic acid deposition. The average acidity is 5 to 6 times that of any other section of the core.

40-2424

Cold regions engineering; Proceedings of the 4th International Conference.

International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986, New York, American Society of Civil Engineers, 1986, 788p., Refs. passim. For individual papers see 40-2425 through 40-2488.

Ryan, W.L., ed.

Cold weather construction, Permafrost beneath structures, Offshore structures, Ice loads, Engineering, Maintenance, Snow surveys, Waste disposal, Sewage treatment, Water treatment, Meetings.

40-2425

Special pile foundations for a coastal permafrost site.

Thomas, H., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.1-10, 5 refs.

Mobley, K.

Permafrost beneath structures, Pile structures, Foundations, Saline soils, Frost penetration, Loads (forces), Design.

40-2426

Adfreeze strength of ice to steel pipe piles as a function of temperature.

Foster, M.L., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.11-20, 4 refs.

Ice formation, Piles, Ice adhesion, Ice strength, Ice solid interface, Steel structures, Strains, Temperature effects, Pipes (tubes), Offshore drilling, Permafrost.

40-2427

Design of tension member insulated anchor for Arctic pipelines.

Shackelford, J.A., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.21-30.

Wineland, J.D.

Pipelines, Thermal expansion, Anchors, Cold weather construction, Thermal insulation, Design, Loads (forces).

40-2428

Costs of track related highway damage to Alaska.

Connor, B., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.31-40, 2 refs.

Road maintenance, Winter maintenance, Pavements, Damage, Cost analysis, Trafficability.

40-2429

Survey of airport pavement distress in cold regions.

Vinson, T.S., et al, MP 2002, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.41-50, 5 refs.

Zomeran, I., Berg, R., Tomita, H.

Airports, Pavements, Freeze thaw cycles, Cracking (fracturing), Damage, Climatic factors, Design.

In early fall 1984, USACRREL conducted a study of airport pavements in cold regions of the United States. The most common pavement problems were associated with non-traffic related phenomena and include (1) pre-existing cracks reflecting through asphalt concrete overlays (in two years or less), (2) thermal cracking, and (3) longitudinal cracking (at a construction joint). Most of the airports experienced (1) water pumping up through cracks and joints in the pavements during spring thaw, or (2) additional roughness due to differential frost heave in the winter, or both problems. Many airport managers reported that debris was generated at cracks during the winter and spring. Several airports experienced problems with lighting in the winter and spring. Many pavement problems can be traced to the evolutionary history of general aviation airports and the lack of consideration for site drainage.

40-2430

Hot sand for improved traction on icy roads.

Reckard, M.K., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.51-57, 6 refs.

Road icing, Sands, Heating, Traction, Skid resistance, Ice removal, Tests.

40-2431

Artificial ice islands for deep water and production structures.

Connolly, S.T., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.58-68, 20 refs.

Artificial islands, Ice islands, Offshore structures, Seasonal ablation, Ice loads, Ice erosion, Ice melting, Mathematical models, Ocean waves, Ice strength, Meteorological factors.

40-2432

Drilling unit approval and sea ice, Alaska OCS.

Kuranel, R.Y., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.69-81, 2 refs.

Tyagi, R., Walker, J.

Offshore drilling, Sea ice distribution, Ice conditions, Offshore structures, Ice surveys, Safety, Ice forecasting.

40-2433

Iceberg impact load on a gravity based structure.

Duthinh, D., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.82-92, 4 refs.

Marsden, S.

Offshore structures, Ice loads, Icebergs, Impact strength, Friction, Ice solid interface, Computer applications, Ice strength.

40-2434

Building foundation on thawed soil and permafrost.

Weston, H.K., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.93-105, 8 refs.

Williams, T.R.

Permafrost beneath structures, Foundations, Pile structures, Ground thawing, Discontinuous permafrost, Buildings, Geophysical surveys, Particle size distribution, Electromagnetic properties, Tests.

40-2435

35-Year old foundations, Thule Air Base, Greenland.

Mangus, A.R., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.106-117, 6 refs.

Permafrost beneath structures, Foundations, Buildings, Cold weather construction, Military facilities.

40-2436

Stabilization of a permafrost subsidence in the airport runway at Bethel, Alaska.

McCadden, T., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.118-133.

Siebe, C.

Permafrost beneath roads, Soil stabilization, Airports, Runways, Ground thawing, Cold weather construction, Thermal insulation, Pavements, Design, Thermistors.

40-2437

Laboratory study of factors affecting wetted snow roads.

Nelson, W.G., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.134-142, 5 refs.

Snow roads, Snow removal, Water, Snow temperature, Temperature effects, Wet snow, Tests, Wettability.

40-2438

CBR test applied to processed and compacted snow.

Haas, W.M., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.143-154, 16 refs.

Bott, M.W.

Snow roads, Snow cover effect, Trafficability, Bearing strength, Snow compaction, Tests, Stresses, Loads (forces), Penetration.

40-2439

Soil strength recovery using a Clegg Impact Device.

Alkire, B.D., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.155-166, 6 refs.

Winters, I.

Subgrade soils, Soil strength, Ground thawing, Freeze thaw cycles, Roads, Loads (forces), Tests, Impact strength, Frost action.

40-2440

Design and monitoring of an ice drill pad.

Le, K.M., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.167-180, 8 refs.

Winfree, M.B.

Ice drills, Ice cover strength, Bearing strength, Ice deformation, Tundra, Thermal diffusion, Ice creep, Computer programs, Design, Temperature effects, Stability.

40-2441

Self-refrigerated gravel pad foundation for large thermal loads.

Cronin, J.E., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.181-191, 3 refs.

Kinney, T.C., Jain, S.K.

Permafrost beneath structures, Permafrost thermal properties, Gravel, Foundations, Refrigeration, Thermal stresses, Settlement (structural), Design criteria, Thermal insulation, Temperature variations.

40-2442

Development of a self-heating thermal probe for saline permafrost.

Nixon, J.F., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.192-199, 3 refs.

Permafrost thermal properties, Saline soils, Unfrozen water content, Geothermy, Temperature measurement, Subsea permafrost, Frozen ground temperature.

## 40-2443

Installation of thermistor strings in test borings: a comparison of methods and results.

Klein, C.A., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.200-206.

Wilson, C.R., Benson, B.D., Carpenter, G.W. Soil temperature, Thermistors, Boreholes.

## 40-2444

Monitoring techniques for thermosyphons.

Yarmak, E., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.207-219, 6 refs.

Long, E.L.

Soil freezing, Refrigeration, Pipes (tubes), Subgrades, Heat transfer, Temperature measurement, Monitors, Design.

## 40-2445

Ground temperature monitoring Cominco's Red Dog Project.

Hammer, T.A., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.220-234.

Krzewinski, T.G., Booth, G.G.

Monitors, Soil temperature, Temperature measurement, Frozen ground temperature, Thermal regime, Thermistors, Vegetation, Soil water, Snow cover effect, Climatic factors.

## 40-2446

Design evaluations in support of offshore facilities and gravel islands in the Arctic.

Manikian, V., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.235-351, 10 refs.

Machemehl, J.L., Gadd, P.E.

Offshore structures, Artificial islands, Gravel, Ice loads, Foundations, Ice conditions, Damage, Design criteria, Soil strength, Piles, Soil stabilization.

## 40-2447

Testing of admixtures for seabed strengthening.

Mahmood, A., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.252-263, 6 refs.

Merrill, K.S., Le, K.M.

Offshore structures, Ocean bottom, Soil stabilization, Cement admixtures, Bottom sediment, Tests, Marine deposits, Concrete curing, Shear strength, Temperature effects, Beaufort Sea.

## 40-2448

Design of modular structures for the Arctic.

Muratoglu, O.H., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.264-276.

Ganguly, P.

Offshore structures, Marine transportation, Snow loads, Ice loads, Foundations, Frozen ground strength, Ice adhesion, Design criteria, Loads (forces).

## 40-2449

Lessons learned from examination of membrane roofs in Alaska.

Tobiasson, W., et al, MP 2003, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.277-290, 10 refs.

Osgood, S.

Roofs, Moisture detection, Freeze thaw cycles, Damage, Thermal expansion, Thermal effects.

During 1984 and 1985 airborne infrared roof moisture surveys were conducted of membrane roofs at army installations in Alaska. Many of these roofs were also visually inspected and cored to verify infrared findings. Numerous areas of wet insulation were found but often they were small enough and the surrounding roofing system was in good enough condition to warrant removal and replacement of just the wet areas. Essentially all moisture entered from the exterior through flaws in the membrane and flashings. The lack of problems from internal moisture indicates that current vapor retarders, even though imperfect, are adequate. Some "cold regions" appurtenances such as membrane control joints, and insulation breather vents appear to do more harm than good. The protected membrane (upside-down) roofing system is well suited to Alaska but some

problems have occurred when the membrane lacks slope to drain. Low-strength concrete pavers used for roof ballast have been deteriorated by freeze-thaw action.

## 40-2450

Snow load design for Colorado Mountains.

Berry, D.L., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.291-308, 9 refs.

Snow loads, Buildings, Roofs, Snow slides, Snow cover effect, Mountains, Skis, Wind effects, Solar radiation, Snow accumulation, Models, United States—Colorado.

## 40-2451

Ester West slide—a case history.

Johnson, E.G., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.309-319.

Permafrost, Soil creep, Sliding, Slope processes, Embankments, Frozen ground mechanics, Slope orientation, Mudflows, Stability.

## 40-2452

Reinforced roads bridging voids.

Kinney, T.C., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.320-329, 2 refs.

Pavements, Thermal effects, Freeze thaw cycles, Construction materials, Mathematical models, Ground thawing, Settlement (structural), Loads (forces), Design, Computer applications.

## 40-2453

Characterization of the Dalton highway foundation soils.

Vita, C.L., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.330-340, 12 refs.

Rooney, J.W.

Permafrost beneath roads, Soil compaction, Soil texture, Ground thawing, Roadbeds, Landforms, Strains, Foundations, Settlement (structural), Erosion, Road maintenance.

## 40-2454

An economical approach to receiving coal by rail in the sub-Arctic environment.

Swigart, B., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.341-350.

Peratrovich, R., Jr.

Railroads, Coal, Cold weather construction, Cargo, Loading, Design, United States—Alaska.

## 40-2455

Cold regions features of the Whittier access tunnel.

Slakey, D.M., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.351-363, 6 refs.

Klein, S.J.

Tunnels, Tunneling (excavation), Cold weather construction, Trafficability.

## 40-2456

Long term performance of the Goldstream Creek bridge.

Baldassari, D.J., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.364-368, 3 refs.

Permafrost beneath structures, Bridges, Soil temperature, Settlement (structural), Freeze thaw cycles, Piles, Thermal regime, Damage, Thermocouples, Streams, United States—Alaska—Fairbanks.

## 40-2457

Thermal analysis of pavement thawing.

Rutherford, M., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.369-383, 10 refs.

Mahoney, J.P.

Pavements, Ground thawing, Thermal analysis, Freeze thaw cycles, Frost penetration, Frost resistance, Subgrades, Air temperature.

## 40-2458

Ice cover research—present state and future needs.

Kerr, A.D., et al, MP 2004, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.384-399, Refs. p.392-399.

Frankenstein, G.E.

Ice cover strength, Floating ice, Ice loads, Ice pressure, Offshore structures, Dynamic loads, Bearing strength, Engineering, Ice cover thickness, Stresses. Presentation reviews, at first, a number of problem areas in ice engineering, such as the determination of vertical and horizontal forces floating ice covers exert on fixed structures, the bearing capacity of ice covers subjected to loads of short or long duration, and the response of ice covers subjected to moving loads. The analytical fundamentals are then briefly reviewed and their relationship to actual field conditions is discussed. The presentation concludes with a discussion of problems encountered in laboratory tests. Throughout the presentation areas that require further study and clarification are indicated.

## 40-2459

Terrain analysis from space shuttle photographs of Tibet.

Kreig, R.A., et al, MP 2J97, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.400-409, 14 refs.

Guodong, C., Brown, J.

Permafrost distribution, Alpine landscapes, Remote sensing, Topographic features, Continuous permafrost, Mapping, Spaceborne photography, Aerial surveys, Tibet.

## 40-2460

Anchorage taps Eklutna Lake for new water supply.

Miller, R.E., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.410-418, 8 refs.

Blackmer, W.H.

Water supply, Water pipelines, Cold weather construction, Design, Water resources, Water treatment, United States—Alaska—Anchorage.

## 40-2461

Eklutna water project.

Harris, G.S., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.419-432, 3 refs.

Water pipelines, Cold weather operation, Water treatment, Freezing, Sludges, Permafrost distribution, Damage, Countermeasures, Cold weather construction, River diversion.

## 40-2462

Water treatment facility design for a glacial lake.

Kreft, P., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.433-449.

Spiegel, D.J.

Glacial lakes, Water treatment, Freeze thaw cycles, Suspended sediment, Water supply, Design criteria, Sludges, Water chemistry, United States—Alaska—Eklutna Lake.

## 40-2463

Slope investigation and repair MP 6981—Trans-Alaska pipeline.

Alto, J.V., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.450-460, 4 refs.

Pipelines, Maintenance, Slope orientation, Slope stability, Sediments, Thermistors, Engineering, Traverses, United States—Alaska.

## 40-2464

Alyeska reroutes Trans-Alaska pipeline at MP 200.

Simmons, G.G., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.461-471, 2 refs.

Ferrell, J.E.

Pipelines, Maintenance, Settlement (structural), Permafrost beneath structures, Cold weather construction, Deformation, Damage, United States—Alaska.

40-2465

**Massive ice detection by earth resistivity.** Kinney, R.P., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.472-481, 8 refs.  
**Ground ice, Remote sensing, Electrical resistivity, Soil creep, Ground thawing, Detection, Settlement (structural), Pipelines.**

40-2466

**Performance study of the lagoon at Inuvik, N.W.T.** Magditsch, A., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.482-498, 19 refs.  
 Heinke, G.W.  
**Sewage disposal, Ice cover effect, Cold weather operation, Sewage treatment, Sludges, Environmental protection, Canada—Northwest Territories—Inuvik.**

40-2467

**Case study—city of Whitehorse.** Lumsden, T.W., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.499-509, 5 refs.  
 Smith, D.W., Siu, K.L., Penel, J.  
**Sewage treatment, Water treatment, Cold weather operation, Waste treatment, Environmental protection, Water pollution, Canada—Yukon Territory—Whitehorse.**

40-2468

**Wastewater plant cold weather operational problems.** Pottle, D.S., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.510-519.  
**Waste treatment, Water treatment, Cold weather operation, Ice formation, Icing, Freezing, Equipment.**

40-2469

**Repair welding of Arctic offshore structures and vessels.** Luft, H.B., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.520-535, 19 refs.  
 Wittek, R., Smuga-Otto, I.  
**Offshore structures, Ships, Welding, Cold weather construction, Temperature effects, Offshore drilling, Steel structures, Corrosion.**

40-2470

**Finite element modelling of cold regions concreting.** Suprenant, B.A., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.536-545, 23 refs.  
 Basham, K.D.  
**Winter concreting, Cold weather construction, Concrete structures, Heat transfer, Models, Convection, Thermal conductivity, Computer programs.**

40-2471

**F.E.M. analysis of mobile Arctic caisson island with stochastic material properties.** Hoddinott, T.K., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.546-557, 13 refs.  
 Swamidass, A.S.J., Munaswamy, K., Arockiasamy, M.  
**Caissons, Artificial islands, Offshore structures, Ice loads, Wind factors, Ocean waves, Construction materials, Design, Ocean bottom, Mathematical models, Stresses.**

40-2472

**Arctic stream scour: a case history.** Mahmood, A., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.558-571, 1 ref.  
 Barrett, J.K., Schlegel, M.G.  
**Ice scouring, Ice lenses, Erosion, Ice breakup, Permafrost, Soil temperature, Snow cover effect, Ice cracks.**

40-2473

**Geomembrane liner performance in the Arctic.** Anderson, L.M., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.572-581, 1 ref.  
**Linings, Cold weather tests, Freeze thaw tests, Flexural strength, Materials, Cold chambers, Temperature effects, Cracking (fracturing).**

40-2474

**Developing a community water system for Shishmaref, Alaska.** Farmwald, J.A., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.597-608, 3 refs.  
 Crum, J.A.  
**Water supply, Reservoirs, Permafrost, Ice conditions, Ice formation, Sands, Frazil ice, River ice, Ice cover effect, Water pipelines.**

40-2475

**Frazil ice problems in intakes at Montreal.** Parkinson, F.E., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.609-618.  
**Frazil ice, Water intakes, Ice conditions, River flow, Ice formation, Ice cover effect, Freezing, Canada—St. Lawrence River.**

40-2476

**Geotechnical investigation Cominco's Red Dog Mine facilities.** Krzewinski, T.G., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.634-648.  
 Stanley, J.M., Moore, D.W.  
**Permafrost, Mining, Equipment, Water supply, Tailings, Waste disposal, Design, Thermistors, Coring, Refrigeration, Engineering, Dams, United States—Alaska.**

40-2477

**Permafrost: a suitable landfill containment barrier.** Pita, F.W., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.649-655, 3 refs.  
 LaVielle, C.C., Grimm, A.  
**Permafrost, Waste treatment, Soil pollution, Site surveys, Continuous permafrost, Design, Environmental protection.**

40-2478

**Effluent dispersion measurement under sea ice.** Colonell, J.M., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.656-669, 4 refs.  
 Berry, A.D.  
**Waste disposal, Ice cover effect, Dispersions, Sea ice, Sea water, Water treatment, Waste treatment, Oceanography, Flow rate, United States—Alaska—Prudhoe Bay.**

40-2479

**Transport of crude oil under saline ice.** Puskas, J.K., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.670-684, 10 refs.  
 McBean, E.A.  
**Oil spills, Ice salinity, Ice bottom surface, Surface roughness, Ocean currents, Mathematical models, Friction, Velocity, Tests.**

40-2480

**Moisture effects on extruded polystyrene insulation.** McFadden, T., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.685-694, 9 refs.  
**Cellular plastics, Thermal insulation, Roofs, Moisture, Ultraviolet radiation, Temperature variations, Climatic factors.**

40-2481

**Evolution of a factory insulated piping system.** Casselman, J.M., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.695-712, 8 refs.  
 Tyrrell, D.G., Whyman, A.D.  
**Thermal insulation, Cellular plastics, Water pipelines, Sewage, Design.**

40-2482

**Insulation performance beneath roads and airfields in Alaska.** Esch, D.C., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.713-722, 11 refs.  
**Thermal insulation, Runways, Permafrost beneath roads, Frost heave, Embankments, Cellular plastics, Roads, Aircraft landing areas, Countermeasures, Thaw depth, Forecasting.**

40-2483

**Waterfront stabilization project: Kaktovik, Alaska.** Hattenburg, S., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.723-736.  
 Dransfield, J.S., Zeman, A.R.  
**Permafrost, Shore erosion, Thermal effects, Walls, Roads, Frost action, Shoreline modification, Countermeasures, Antifreezes, Soil temperature, Design.**

40-2484

**Wave forces on an Arctic monotower platform.** Niedzwecki, J.M., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.737-741, 4 refs.  
 Harrington, M.G.  
**Offshore structures, Ocean waves, Ice breaking, Ice conditions, Hydrodynamics, Design, Ice loads, Loads (forces).**

40-2485

**Legal concerns in cold regions engineering and construction.** Smith, R.J., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.742-750.  
**Engineering, Cold weather construction, Design, Climatic factors.**

40-2486

**Bearing capacity calculations for piles in permafrost.** Parameswaran, V.R., International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.751-759, 13 refs.  
**Pile load tests, Permafrost, Stresses, Soil creep, Rheology, Loads (forces), Pile structures, Foundations, Adhesion, Time factor.**

40-2487

**Upper Delaware River ice control—a case study.** Zufelt, J.E., et al, MP 2005, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.760-770, 7 refs.  
 Doe, W.W., III.  
**Ice control, River ice, Ice jams, Ice conditions, Ice booms, Drift, Ice mechanics, Flooding, Countermeasures.**

The upper one-third of the Delaware River is characterized by a steep gradient with a general riffle/pool sequence. Due to seasonal low flows, a considerable volume of ice is generated and transported throughout the winter months. During February 1981 a catastrophic breakup ice jam occurred along a reach of the Delaware River near Port Jervis, NY, causing \$14.5 million in damages. In February 1982 another breakup ice jam occurred at the same location, causing much concern but minimal flooding and damages. These events prompted the Philadelphia District, U.S. Army Corps of Engineers, to conduct an investigation of the Upper Delaware River to determine if some form of ice control structure could be implemented in order to reduce ice jam-induced flooding. This paper focuses on the field investigations and analyses performed by the U.S. Army Cold Regions Research and Engineering Laboratory for the Philadelphia District during the period 1983-1985. The study included both on site and remote monitoring of ice conditions and hydraulic analysis of several ice control structure alternatives.

## 40-2488

**Strengthening Alaskan Beaufort Sea soils with Portland cement.**

Nidowicz, B., et al, International Conference on Cold Regions Engineering, 4th, Anchorage, Alaska, Feb. 24-26, 1986. Proceedings. Edited by W.L. Ryan, New York, American Society of Civil Engineers, 1986, p.771-783, 19 refs.

Bruggers, D.E.  
Offshore structures, Soil strength, Ocean bottom, Ice loads, Loads (forces), Soil stabilization, Cements, Tests, Artificial islands, Gravel, Bearing strength, Beaufort Sea.

## 40-2489

**Arctic offshore technology and its relevance to the Antarctic.**

Croasdale, K.R., Antarctic Treaty System: an assessment, Washington, D.C., National Academy Press, 1986, p.245-263, 5 refs.

Offshore structures, Petroleum industry, Oil recovery, Sea ice, Economic development, Logistics.

In considering the issue of potential antarctic oil and gas resources, especially offshore, it is perhaps relevant to look to the Arctic for an analog of what might be possible. This chapter provides data on the technology being used and/or developed for Arctic offshore oil and gas operations. The Arctic is defined as northern offshore areas subject to major ice coverage, including the Canadian east coast with its iceberg problems. The major focus is on operations in Canada, where most oil and gas activity has taken place. Other nations bordering on the Arctic, however, also have interests in Arctic offshore resources and are developing technology similar to that which is described. Where appropriate, reference is made to similarities and contrasts between the Arctic and the Antarctic. Some specific possible adaptations of Arctic offshore technology to the Antarctic are suggested. (Auth. mod.)

## 40-2490

**Discussion on technology and economics of minerals development in polar areas.** Antarctic Treaty System: an assessment, Washington, D.C., National Academy Press, 1986, p.265-267.

Economic development, Logistics, Cost analysis, Oil recovery.

With regard to oil drilling in Antarctica *vis à vis* the Arctic, emphasis is placed on differences in environments, logistics, and costs between the two polar regions. Water depths in Antarctica require a different kind of technology which has not yet been developed. Costs in Antarctica would be about 15-20 times more than those for the Arctic.

## 40-2491

**Proceedings.**

Canadian Technical Asphalt Association, 30th Conference, 1985, Montreal, Quebec, Multiscience Publications Ltd., 1985, 394p. + append., Refs. passim. For selected papers see 40-2492 through 40-2494.

Clusiau, J., ed.  
Bitumens, Pavements, Concrete structures, Freeze thaw cycles, Meetings, Frost resistance.

## 40-2492

**Prevention of moisture damage in asphalt concrete pavement.**

Scherocman, J.A., et al, Canadian Technical Asphalt Association, 30th Conference, 1985. Proceedings. Edited by J. Clusiau, Montreal, Quebec, Multiscience Publications Ltd., 1985, p.102-121, 7 refs.

Proctor, J., Morris, W.J.  
Bituminous concretes, Pavements, Moisture, Freeze thaw cycles, Concrete strength, Concrete freezing, Damage, Countermeasures, Concrete admixtures, Cement admixtures, Concrete pavements.

## 40-2493

**Using the freezing index for the optimum selection of paving asphalts with different temperature susceptibilities for any pavement site.**

McLeod, N.W., Canadian Technical Asphalt Association, 30th Conference, 1985. Proceedings. Edited by J. Clusiau, Montreal, Quebec, Multiscience Publications Ltd., 1985, p.282-327.

Pavements, Freezing indexes, Frost penetration, Bitumens, Paving, Temperature effects, Degree days, Cracking (fracturing), Countermeasures.

## 40-2494

**Styrene/butadiene latex modified asphalt.**

Moore, R.B., Canadian Technical Asphalt Association, 30th Conference, 1985. Proceedings. Edited by J. Clusiau, Montreal, Quebec, Multiscience Publications Ltd., 1985, p.346-353, 2 refs.

Bitumens, Cements, Aggregates, Resins, Temperature effects.

## 40-2495

**Proceedings.**

International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985, Downsview, Ontario, Atmospheric Environment Service, 1985, 407p., Refs. passim. For selected papers see 40-2496 through 40-2511.

Agnew, T.A., ed, Swail, V.R., ed.  
Icing, Offshore structures, Ice accretion, Wind factors, Meetings, Ice forecasting, Countermeasures, Ocean waves, Sea spray.

## 40-2496

**Sea spray icing and freezing conditions on offshore drill rigs—Alaska experience and regulatory implications.**

Nauman, J.W., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.57-68, 16 refs.

Tyagi, R.  
Icing, Offshore structures, Superstructures, Sea spray, Ice loads, Ice accretion, Wind factors, Ice control, Temperature effects, Stability.

## 40-2497

**Observations of sea spray icing and outflow winds at Green Island.**

Beal, H.T., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.69-77, 6 refs.

Jandali, T.  
Ship icing, Sea spray, Wind velocity, Ice formation, Road icing, Structures, Wind factors, Climatic factors, Oceanography, Canada—British Columbia—Green Island.

## 40-2498

**Characteristics of marine icing in Canadian waters.**

Brown, R.D., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.78-94, 9 refs.

Agnew, T.A.  
Ship icing, Offshore structures, Superstructures, Marine meteorology, Meteorological data, Onshore drilling, Ice accretion, Wind factors, Ocean waves, Air temperature, Canada.

## 40-2499

**Investigation and research on anti-icing and de-icing devices for marine application.**

Loset, S., International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.95-101, 11 refs.

Icing, Offshore structures, Superstructures, Ice removal, Ice prevention, Protective coatings, Cold chambers, Ship icing, Countermeasures, Ice accretion, Experimentation.

## 40-2500

**Overview of marine icing modelling.**

Lozowski, E.P., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.102-122, Refs. p.120-122.

Gates, E.M.  
Icing, Offshore structures, Ice accretion, Sea spray, Freezing, Fog, Rain, Snow, Air temperature, Marine transportation, Ocean waves, Models, Wind velocity.

## 40-2501

**Evaluation of currently available marine icing models for prediction of icing on ships and offshore structures.**

Brown, R.D., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.123-139, 27 refs.

Agnew, T.A.  
Icing, Offshore structures, Ship icing, Ice forecasting, Ice loads, Ice accretion, Salinity, Ocean waves, Models.

## 40-2502

**Icing rates on cylindrical structures.**

Makkonen, L., International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.140-151, 23 refs.

Icing, Offshore structures, Ice loads, Ice accretion, Heat transfer, Ship icing, Aircraft icing, Sea spray, Wind tunnels, Mathematical models, Climatic factors, Salinity, Cylinders.

## 40-2503

**Numerical sea spray icing model including the effect of a moving water film.**

Horjen, I., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.152-164, 11 refs.

Vefsnmo, S.  
Icing, Offshore structures, Sea spray, Brines, Ice accretion, Mathematical models, Ice prevention, Wind factors, Heat flux, Cylinders.

## 40-2504

**Remote sensing of ocean surface wind speeds with Nimbus-7 scanning microwave radiometer.**

Rubenstein, I.G., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.186-195, 10 refs.

Moreau, T.A., Ramseier, R.O.  
Sea ice distribution, Remote sensing, Oceanography, Radiometry, Models, Surface properties, Microwaves, Wind velocity, Charts.

## 40-2505

**Robust algorithm for prediction of vessel icing.**

Overland, J.E., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.248-256, 11 refs.

Pease, C.H., Preisendorfer, R.W., Comiskey, A.L.  
Ship icing, Ice accretion, Offshore structures, Wind velocity, Ice forecasting, Air temperature, Sea water, Water temperature.

## 40-2506

**Hindcasting of sea surface air temperature in the Norwegian Sea.**

Houmb, O.G., International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.257-266, 6 refs.

Icing, Sea spray, Air temperature, Air water interactions, Offshore structures, Models, Wind factors, Temperature effects, Surface temperature.

## 40-2507

**Evaluation of a freezing spray forecast system.**

MacDonald, K.A., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.267-277, 10 refs.

Jessup, R.G.  
Icing, Sea spray, Ice accretion, Ice forecasting, Wind velocity, Water temperature, Air temperature, Ocean waves, Salinity, Models.

## 40-2508

**Ship superstructure ice accretion guidance forecasts.**

Feit, D.M., International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.278-286, 3 refs.

Ship icing, Ice accretion, Superstructures, Ice forecasting, Offshore structures, Safety.

## 40-2509

**Measurement of icing on offshore structures.**

Mins, L.D., MP 2010, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.287-292, 3 refs.

Icing, Offshore structures, Ice accretion, Sea spray, Ship icing, Superstructures, Ice detection, Precipitation (meteorology), Lasers.

40-2510

Atmospheric icing on oil rigs off Canada's east coast. Mitten, P., et al, International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.293-312, 9 refs.  
Paschke, P., Brown, R.D.  
Offshore structures, Aircraft icing, Icing, Ice accretion, Propellers, Precipitation (meteorology), Glaze, Hoarfrost.

40-2511

Icing on semi-submersible platforms. Liljeström, G., International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, Oct. 7-11, 1985. Proceedings. Edited by T.A. Agnew and V.R. Swail, Downsview, Ontario, Atmospheric Environment Service, 1985, p.313-328, 9 refs.  
Icing, Offshore structures, Ship icing, Ice accretion, Design, Hydraulic structures, Sea spray, Supercooling, Precipitation (meteorology), Ice removal, Platforms.

40-2512

Environmental Assessment of the Alaskan Continental Shelf, Vol.21. Anchorage, Alaska, U.S. National Oceanic and Atmospheric Administration, Ocean Assessments Division, Alaska Office, Feb. 1984, 68 pp., PB85-215796, Principal investigators' final reports. Refs. p.9(0)-9(10). Final report by J.R. Payne, et al: "Multivariate analysis of petroleum weathering in the marine environment—sub Arctic." Vol.1—Technical results.  
Payne, J.R.  
Oil spills, Weathering, Crude oil, Microbiology, Degradation, Ocean environments, Sea water, United States—Alaska.

40-2513

Environmental Assessment of the Alaskan Continental Shelf, Vol.22. Anchorage, Alaska, U.S. National Oceanic and Atmospheric Administration, Ocean Assessments Division, Alaska Office, Feb. 1984, 209 pp., PB85-215739, Principal investigators' final reports. Final report by J.R. Payne, et al: "Multivariate analysis of petroleum weathering in the marine environment—sub Arctic." Vol.2—Appendices.  
Oil spills, Weathering, Models, X ray diffraction.

40-2514

Installation for investigation of frost heave forces on foundations. Pchelintsev, A.M., *Soil mechanics and foundation engineering*, May-June 1985 (Pub. Nov.85), 22(3), p.103-104, Translated from *Osnovaniia, fundamenty i mekhanika gruntov*.  
Foundations, Soil freezing, Frost heave, Stresses.

40-2515

Calculation of combined ice-wind load on power lines in mountains. Metod za opredeliane na kombinirano skrežno i vetrovo natovarvane vörkhu provodnitsite na elektroprovod pri planinski usloviia, Moraliński, E., *Khidrologiia i meteorologiia*, 1980, 29(1), p.9-12, In Bulgarian with English and Russian summaries. 4 refs.  
Power line icing, Ice loads, Wind factors, Models.

40-2516

Studies of dielectric properties of the water-ice transition phase in the ultra-high frequency range. (Izsladvane na dielektrichnite svojstva pri fazovii perekhod voda-led v SVCh diapazon). Kachurin, L.G., et al, *Khidrologiia i meteorologiia*, 1980, 29(2), p.12-18, In Bulgarian with English and Russian summaries. 14 refs.  
Kolev, S.I.  
Ice crystal growth, Phase transformations, Ice formation, Dielectric properties, Ice physics.

40-2517

Determining the age of snow-firn plugs in some vertical hollows of the Kamenititsa cirque. (Opredeliane vüzarastta na snezhnifirnovi tapi v niakoi propastni peshchervi v tsirkusa Kamenititsa). Georgieva, L., et al, *Khidrologiia i meteorologiia*, 1980, 29(2), p.65-67, In Bulgarian with Russian and English summaries. 4 refs.  
Dzherakhov, N., Mikhnevski, N., Simchev, T.  
Glacial erosion, Cirques, Ice caves, Snow accumulation, Firn, Age determination, Alpine landscapes.

40-2518

Microclimatic studies of the Lednitsa cave in the Smoljan region near Gella village. (Mikroklimatichtni izsledvaniia v peshcherata "Lednitsa" pri s. Gela, Smoljanski okrug). Dimitrov, D., et al, *Khidrologiia i meteorologiia*, 1981, 30(1), p.54-63, In Bulgarian with English and Russian summaries. 3 refs.  
Spasov, K.  
Glacial erosion, Cirques, Ice caves, Microclimatology.

40-2519

Rarely observed avalanche type. (Vörkhu edin riadko nablüdvavan vid snezhna lavina). Krüstev, L., *Khidrologiia i meteorologiia*, 1981, 30(5), p.53-55, In Bulgarian with English and Russian summaries.  
Avalanche formation, Snow accumulation, Snow depth, Avalanche triggering.

40-2520

Hoarfrost deposition under highland conditions. (Vörkhu otlaganeto na skrezh pri planinski usloviia). Stanev, S., et al, *Khidrologiia i meteorologiia*, 1981, 30(6), p.25-31, In Bulgarian with English and Russian summaries. 4 refs.  
Moraliński, E.  
Power line icing, Ice accretion, Hoarfrost, Ice loads.

40-2521

Arctic news record, Vol.4, No.3/4, Fall-winter, 1985. Bergen, Norway, Dec. 1985, 64p.  
Offshore structures, Ice navigation, Ice conditions, Ice scoring, Ice islands, Geophysical surveys, Environmental protection, Canada, Greenland, United States—Alaska.

40-2522

Iceberg scouring in Hudson Bay. Whitaker, S., et al, *Arctic news record*, Fall-winter, 1985, 4(3/4), p.8.  
Chevalier, B.  
Ice scoring, Icebergs, Bottom topography, Ocean bottom, Topographic features, Canada—Hudson Bay.

40-2523

Geophysical studies on the polar continental shelf. Embry, A.F., *Arctic news record*, Fall-winter 1985, 4(3/4), p.10-11.  
Ice islands, Geophysical surveys, Bottom sediment, Seismic surveys.

40-2524

Greenland ice core studies. Dansgaard, W., *Palaeogeography, palaeoclimatology, palaeoecology*, Aug. 1985, 50(2/3), p.185-187, 4 refs.  
Ice cores, Isotope analysis, Drill core analysis, Palaeoclimatology, Greenland.

40-2525

Recent and last glacial deep-sea facies: response to global climatic oscillation. Murdmaa, I.O., et al, *Palaeogeography, palaeoclimatology, palaeoecology*, Aug. 1985, 50(2/3), p.285-290, 20 refs.  
Ivanova, E.V.  
Ocean bottom, Glaciation, Marine geology, Climatic changes, Bottom sediment, Palaeoclimatology, Plankton, Marine deposits.

40-2526

On the hydrographic and ice conditions in the northern North Atlantic during different phases of a glaciation cycle. Stigebrandt, A., *Palaeogeography, palaeoclimatology, palaeoecology*, Aug. 1985, 50(2/3), p.303-321, 13 refs.  
Sea ice distribution, Hydrography, Ice conditions, Glaciation, Palaeoclimatology, Models, Sea water, Salinity, Ocean currents, Arctic Ocean.

40-2527

Glaciation in Alaska: the geologic record. Hamilton, T.D., ed, Anchorage, Alaska Geological Society, 1986, 265p., Refs. passim. Includes 11 articles.  
Reed, K.M., ed, Thorson, R.M., ed.  
Glaciation, Glacial geology, Glacial deposits, Pleistocene, Moraines, Sedimentation, History, United States—Alaska.

40-2528

Study of strength requirements for nozzles for ice transiting ships. Laskow, V., et al, *Transport Canada. Report*, July 1985, TP 6837E, 177p., 31 refs.  
Revill, C.  
Icebreakers, Ice navigation, Propellers, Marine transportation, Ships, Design, Computer applications, Strength.

40-2529

Measurement of ice/propeller interaction parameters —M.V. Robert LeMeur. Main report. Duff, J., et al, *Transport Canada. Report*, Aug. 1985, TP 6839E, 271p., 11 refs.  
Kirby, K., Laskow, V.  
Icebreakers, Propellers, Ice solid interface, Ice loads, Impact strength, Marine transportation, Ships, Ice navigation.

40-2530

Measurement of ice/propeller interaction parameters —M.V. Robert LeMeur. Appendices to main report. Duff, J., et al, *Transport Canada. Report*, Aug. 1985, TP 6840E, 8 appends.  
Kirby, K., Laskow, V.  
Icebreakers, Propellers, Ice solid interface, Ships, Ice loads, Velocity, Statistical analysis, Computer applications.

40-2531

Measurement of ice/propeller interaction parameters —M.V. Robert LeMeur. Engineering and field tests. Kirby, K., et al, *Transport Canada. Report*, Aug. 1985, TP 6842, 261p. + appends., 24 refs.  
Laskow, V., Spencer, P.  
Icebreakers, Propellers, Ice solid interface, Ice navigation, Ice conditions, Ice loads, Impact strength, Ships.

40-2532

Xe in glacial ice and the atmospheric inventory of noble gases. Bernatowicz, T.J., et al, *Geochimica et cosmochimica acta*, Dec. 1985, 49(12), p.2561-2564, 10 refs.  
Kennedy, B.M., Podosek, F.A.  
Glacier ice, Gas inclusions, Atmospheric composition.  
We report noble gas abundance data for four antarctic glacial ice samples which were selected to test the hypothesis that the apparent Xe deficiency in the Earth's atmosphere relative to meteoritic abundance is due to incorporation of Xe in glacial ice. Our measurements indicate that the concentrations of Xe in glacial ice fall far short of what the hypothesis requires. The present results complete the survey of all significant atmospheric reservoirs and show that the "missing Xe" is not contained in any of them. It must either be in the solid earth in yet unsampled reservoirs, or else it simply does not exist and the noble gas abundance pattern of the Earth is dissimilar to that in meteorites. (Auth.)

40-2533

Laboratory study of secondary ice particle production by the fragmentation of rime and vapour-grown ice crystals. Griggs, D.J., et al, *Royal Meteorological Society. Quarterly journal*, Jan. 1986, 112(471), p.149-163, 14 refs.  
Choulaton, T.W.  
Ice crystal growth, Hoarfrost, Cloud physics, Laboratory techniques.

40-2534

Sea ice biota. Horner, R.A., ed, Boca Raton, CRC Press, 1985, 215p., Refs. passim. For individual papers see 40-2535 through 40-2542 or B-33364, B-33366 through B-33370 and F-33365.  
DLC QH95.56.S43 1985  
Marine biology, Algae, Sea ice, Ice physics, Cryobiology, Microbiology.

The biota are described and explained in the circumstances of both Arctic and Antarctic regions. The book begins with a chapter on the history of ice algal studies starting with the earliest reports of ice algae in the literature and extending to the most recent studies. An extensive chapter on the physical properties of sea ice follows, which may provide answers to some of the questions concerning the ability of the organisms to live and grow in the ice. Three chapters on the ecology, chemical composition and biochemistry, growth, metabolism, and dark survival follow, based on data obtained in the last 20 years. The taxonomy of the microalgae found in sea ice is discussed in chapter 6, and a preliminary check list of algal species reported from sea ice is given in the Appendix. The chapter on bacteria reviews the sparse data on this important component of the ice community. Most of the information is from studies in the Antarctic and has been obtained since 1980. The complexities of Arctic faunal communities associated with sea ice are discussed in the final chapter.

40-2535

History of ice algal investigations. Horner, R.A., Sea ice biota. Edited by R.A. Horner, Boca Raton, CRC Press, 1985, p.1-19, 105 refs.  
DLC QH95.56.S43 1985  
Algae, Sea ice, Polar regions.

The history of ice algal studies is reviewed, starting with reports on sea ice diatoms from nearly 150 years ago and extending to studies since 1960 to the present. Researchers in arctic and antarctic regions are identified, their significant contributions are noted, and their spheres of influence are assessed.

## 40-2536

## Ice environment.

Maykut, G.A., Sea ice biota. Edited by R.A. Horner, Boca Raton, CRC Press, 1985, p.21-82, 115 refs. DLC QH95.56.S43 1985

## Sea ice, Ice physics, Cryobiology, Ice growth, Ice structure, Ice salinity, Ice heat flux, Mass balance, Polar regions.

This extensive review on existing knowledge of sea ice covers the extent and morphology of the polar ice pack, the formation and growth of sea ice, its structure and salinity, thermal, mechanical and optical properties, energy fluxes, and response of ice to environmental changes.

## 40-2537

## Ecology of sea ice microalgae.

Horner, R.A., Sea ice biota. Edited by R.A. Horner, Boca Raton, CRC Press, 1985, p.83-103, 114 refs. DLC QH95.56.S43 1985

## Algae, Ecology, Plankton, Cryobiology, Sea ice, Microbiology, Polar regions.

This article discusses the formation and disintegration of communities in bottom, surface, and interior ice; the geographic distribution of ice algae, their origin, annual cycle, and environmental factors such as light, temperature and nutrient concentrations and salinity. Various hypotheses concerning phytoplankton bloom and the use of ice algae as environmental indicators are reviewed.

## 40-2538

## Chemical composition and biochemistry of sea ice microalgae.

McConville, M.J., Sea ice biota. Edited by R.A. Horner, Boca Raton, CRC Press, 1985, p.105-129, 156 refs. DLC QH95.56.S43 1985

## Algae, Sea ice, Cryobiology, Growth, Microbiology.

It is found that the gross chemical composition and pathways of carbon assimilation of ice algae are similar to related species from other marine ecosystems; morphologically and chemically they most closely resemble benthic microalgal species. Their fatty acids are highly unsaturated; the cellular levels of reserve material are markedly influenced by environmental factors, its accumulation not being observed under winter conditions. It is suggested that the considerable variability found in cellular pigment composition may result from spatial heterogeneity of under ice irradiance, and that measurements of the physiological state of microalgae may be useful for improving estimates of primary productivity in the ice community.

## 40-2539

## Growth, metabolism, and dark survival in sea ice microalgae.

Palmisano, A.C., et al, Sea ice biota. Edited by R.A. Horner, Boca Raton, CRC Press, 1985, p.131-146, 108 refs.

Sullivan, C.W.

DLC QH95.56.S43 1985

## Sea ice, Microbiology, Photosynthesis, Growth, Cryobiology, Algae.

Much of the work published to date on the physiology and acclimatization in sea ice microalgae is reviewed. *In situ* growth rates estimated by Bunt et al. are considered (showing that rates of 0.08 to 0.21/day can be calculated for the spring bloom in McMurdo Sound in 1967) as are findings by other authors. Microalgal photosynthesis, heterotrophy, and dark survival are reviewed at length.

## 40-2540

## Taxonomy of sea ice microalgae.

Horner, R.A., Sea ice biota. Edited by R.A. Horner, Boca Raton, CRC Press, 1985, p.147-171, 85 refs. DLC QH95.56.S43 1985

## Algae, Sea ice, Cryobiology.

Literature on organisms from antarctic and arctic sea ice is reviewed, showing that many algal classes are found in sea ice, with diatoms being the most abundant organisms. Some species are found over wide geographic areas in both the ice and the water column near the ice. A number of unusual organisms have been found in the ice and in seawater near drifting ice. It is suggested that additional taxonomic studies are needed, especially in the Antarctic where species lists from McMurdo Sound and Mirnyy had no species in common, and that organisms other than diatoms should be identified and studied.

## 40-2541

## Sea ice bacteria: reciprocal interactions of the organisms and their environment.

Sullivan, C.W., Sea ice biota. Edited by R.A. Horner, Boca Raton, CRC Press, 1985, p.159-171, 65 refs. DLC QH95.56.S43 1985

## Sea ice, Ice nuclei, Bacteria, Cryobiology.

Areas in which ice bacteria are suspected to play an important role include: secondary microbial production mediated through the microbial loop; remineralization and recycling of ice-associated organic matter; maintenance of balance in the ice microenvironment with regard to detoxification and oxygen consumption; trace gas production, and ice nucleation and early stages of sea ice formation.

## 40-2542

## Marine ice fauna: Arctic.

Carey, A.G., Jr., Sea ice biota. Edited by R.A. Horner, Boca Raton, CRC Press, 1985, p.173-190, 83 refs. DLC QH95.56.S43 1985

## Sea ice, Cryobiology, Marine biology, Ecology, Microbiology.

## 40-2543

## Mobility of water in frozen soils.

Lunardini, V.J., et al, MP 2012, Army Science Conference, June 15-18, 1982. Proceedings, [1982], c15p., 32 refs.

Berg, R., McGaw, R., Jenkins, T.F., Nakano, Y., Olyphant, J.L., O'Neill, K., Tice, A.

## Frozen ground physics, Soil water migration, Thaw weakening, Frost heave, Unfrozen water content, Ground ice, Soil temperature, Mathematical models.

## 40-2544

## Polymer concrete.

Blaga, A., et al, Canadian building digest, Nov. 1985, CBD 242, 4p., 8 refs.

Beaudoin, J.S.

## Freeze thaw tests, Polymers, Concrete aggregates, Concrete strength.

## 40-2545

## Behaviour of chloroform from pulp bleaching in an ice-covered Flanish lake.

Pecher, K., et al, Science of the total environment, Jan. 1986, 48(1-2), p.123-132, Refs. p.130-132.

Herrmann, R.

## Lake water, Water pollution, Ice cover effect, Waste disposal, Chemical analysis.

## 40-2546

## Late Pleistocene history of northeastern New England and adjacent Quebec.

Borns, H.W., Jr., ed, Geological Society of America. Special paper, No. 197, Boulder, CO, Geological Society of America, 1985, 159p., Refs. passim. Includes 13 papers.

LaSalle, P., ed, Thompson, W.B., ed.

## Glaciation, Glacial geology, Pleistocene, Paleoclimatology, Stratigraphy, History, United States—New England, Canada—Quebec.

## 40-2547

## Geologic-hazards mitigation in Alaska: a review of federal, state, and local policies.

Combellick, R.A., Alaska. Division of Geological and Geophysical Surveys. Special report, 1985, No.35, 71p., Refs. p.63-65.

## Geologic processes, Avalanche formation, Landslides, Mudflows, Frost heave, Earthquakes, Floods, Coastal erosion, Volcanoes, Countermeasures, United States—Alaska.

## 40-2548

## Effect of the pressure of the carrier gas and the crystal size on the growth forms of ice crystals grown from the vapor.

Namba, J., et al, Seppyo, Dec. 1985, 47(4), p.137-144, With Japanese summary. 22 refs.

Gonda, T.

## Ice crystal growth, Ice crystal structure, Gases, Pressure, Supersaturation, Grain size, Temperature effects.

## 40-2549

## Wetting of polystyrene and urethane roof insulations in the laboratory and on a protected membrane roof.

Tobiasson, W., et al, MP 2011, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, Dec. 1984, 9p. + figs., 13 refs. Presented at the ASTM Committee C-16 Conference on Thermal Insulation, Materials and Systems, Dallas, TX, Dec. 2-6, 1984.

Greator, A., Van Pelt, D.

## Roofs, Thermal insulation, Polymers, Cellular plastics, Moisture, Temperature gradients, Tests.

When subjected to a sustained temperature gradient in the presence of moisture in laboratory wetting tests, urethane and expanded polystyrene roof insulations accumulate enough moisture to significantly reduce their insulating ability. Extruded polystyrene is quite resistant to moisture in such tests. But the vapor drive is not as great in actual roofs and it may reverse direction, thereby seasonally drying the insulation. To determine how well the laboratory tests could predict the wetting rate of insulation in actual protected membrane roofs, extruded and expanded polystyrene and urethane insulations were installed in a protected membrane roof in Hanover, N.H. After three years of exposure, little moisture had accumulated in the extruded polystyrene and it still retained essentially all of its initial insulating ability.

## 40-2550

## Calorimetric study of a phase transition in D2O ice Ih doped with KOD: ice XI.

Matsuo, T., et al, Journal of physics and chemistry of solids, 1986, 47(2), p.165-173, 26 refs.

Tajima, Y., Suga, H.

## High pressure ice, Deuterium oxide ice, Doped ice, Phase transformations, Heat capacity, Temperature measurement.

## 40-2551

## Study of strength requirements for nozzles for ice transiting ships. Summary report.

Laskow, V., et al, Transport Canada. Report, July 1985, TP 6838E, 37p.

Revill, C.

## Ice navigation, Icebreakers, Propellers, Ships, Design criteria, Shear strength.

## 40-2552

## Measurement of ice/propeller interaction parameters—M.V. Robert LeMour. Summary report.

Duff, J., et al, Transport Canada. Report, Aug. 1985, TP 6843E, 36p.

Kirby, K., Laskow, V.

## Icebreakers, Propellers, Ice solid interface, Ice loads, Impact strength, Ships.

## 40-2553

## World climatic systems.

Lockwood, J.G., London, Edward Arnold, 1985, 292p., Numerous refs.

## Snowfall, Paleoclimatology, Sea ice distribution, Air water interactions, Climate, Glaciation, Ice shelves, Icebergs, Carbon dioxide, Glaciers, Snow cover, Ice physics, Atmospheric circulation.

The book, divided into 8 chapters, starts by considering large-scale circulation of the atmosphere, together with its climatic implications. Glacial systems are discussed in detail as are the causes of the ice ages. The growing climatic significance of energy use by man is also discussed, particularly the pollution of the atmosphere by carbon dioxide. The history of ice ages through geological time, including the influence of the antarctic ice sheet on global climate, is considered. Other references to Antarctica, on climate, cloudiness, radiation and temperature, are included.

## 40-2554

## Determination of snow water equivalent by means of natural gamma radiation and satellite pictures.

Luomen vesiarvon määrittäminen luonnon gamma säteilyn ja satelliittikuvien avulla.

Kuittinen, R., et al, Finland. Technical Research Centre. Research reports, 1985, No.370, 98p. + append., In Finnish. 31 refs.

Autti, M., Peräilä, J., Viironmäki, J.

## Snow water equivalent, Gamma irradiation, Remote sensing, Spectroscopy, Water reserves, Finland.

## 40-2555

## Snow and ice control at Helsinki-Vantaa Airport.

Ylösjoke, M., Airport forum, June 1985, 14(3), p.23-26.

## Snow removal, Ice removal, Ice control, Runways, Aircraft landing areas, Airports, Climatic factors, Trafficability, Finland—Helsinki.

## 40-2556

## Highway research will help airports.

Schwartz, A.C., Airport forum, June 1985, 14(3), p.28-30, A report from the 19th International Aviation Snow Symposium, [1984].

## Airports, Winter maintenance, Road maintenance, Ice control, Snow removal, Ice removal.

## 40-2557

## Principal achievements in Soviet geocryology.

McNikov, P.I., Northern engineer, Summer 1985, 17(2), p.8-12.

## Geocryology, Cold weather construction, Permafrost beneath structures.

## 40-2558

## Monitoring temperatures in an offshore Arctic well: a brief note.

Taylor, A., et al, Northern engineer, Summer 1985, 17(2), p.18-19.

Judge, A.

## Offshore structures, Oil wells, Temperature measurement, Monitors, Thermistors.

## 40-2559

## Remote sensing in the North: an aueis case study.

Stringer, W.J., et al, Northern engineer, Summer 1985, 17(2), p.25-29, 4 refs.

George, T.H., Bell, R.M.

## Naleds, Ice formation, Remote sensing, Flooding, Temperature effects, Winter maintenance, Road maintenance.

40-2560

Acoustic probing of stratified snowpacks. Lee, S.M., et al, *Journal of sound and vibration*, Feb. 8, 1986, 104(3), p.528-532, 4 refs.

Rogers, J.C., Tuncay, A.A. Snow acoustics, Stratigraphy, Snow cover, Acoustic measurement, Wave propagation, Measuring instruments.

40-2561

Alaska snow surveys and Federal-State-private cooperative snow surveys. Clagett, G.P., U.S. Dept. of Agriculture, Soil Conservation Service, Feb. 1, 1986, 29p.

Snow surveys, Snow cover, Precipitation (meteorology), Snow water content, Snow accumulation, Altitude, United States—Alaska.

40-2562

Recent climatic variations, their causes and Neogene perspectives.

Miller, M.M., Late Cenozoic history of the Pacific Northwest, San Francisco, California Academy of Science, American Association for the Advancement of Science, 1985, p.357-414, Refs. p.409-414.

Glaciation, Climatic changes, Paleoclimatology, Glacier oscillation, Ice cores, Carbon dioxide, Oxygen isotopes, Solar activity.

40-2563

Winter maintenance.

Pagan, A.R., *Better roads*, July 1985, 55(7), p.36-37. Winter maintenance, Road maintenance, Salting, Snow removal, Ice removal, Cost analysis.

40-2564

Dead-ice sinks and moats: environments of stagnant ice deposition.

Fleisher, P.J., *Geology*, Jan. 1986, 14(1), p.39-42, 9 refs.

Ground ice, Glacier ice, Sediments, Stratigraphy, United States—New York—Appalachian Plateau.

40-2565

Snow loads in the 1985 National Building Code of Canada: curved roofs.

Kennedy, T.H.R., et al, *Canadian journal of civil engineering*, Sep. 1985, 12(3), p.427-438, In English with French summary. 14 refs.

Kennedy, D.J.L., MacGregor, J.G., Taylor, D.A. Snow loads, Roofs, Building codes, Canada.

40-2566

Recent advances in the computation of nonlinear wave effects on offshore structures.

Isaacson, M. de St. Q., *Canadian journal of civil engineering*, Sep. 1985, 12(3), p.439-453, In English with French summary.

Offshore structures, Water waves, Mathematical models, Structural analysis.

40-2567

Mixing coefficient for ice-covered and free-surface flows.

Lau, Y.L., *Canadian journal of civil engineering*, Sep. 1985, 12(3), p.521-526, In English with French summary. 6 refs.

River ice, River flow, Ice cover effect.

40-2568

Fire protection for northern communities.

Heinke, G.W., et al, *Canadian journal of civil engineering*, Sep. 1985, 12(3), p.538-546, In English with French summary. 3 refs.

Christensen, V., Hipperson, L., Bowering, E.J. Fires, Water supply, Polar regions.

40-2569

St. Elias: our highest, youngest and icest mountains.

Theberge, J.B., *Canadian geographic*, Dec. 1985/Jan. 1986, 105(6), p.36-45.

Mountains, Glacier ice, Glacial geology, History, Research projects.

40-2570

Development of the atmospheric boundary layer over the coastal region of the Weddell Sea during offshore winds.

Gube-Lenhardt, M., et al, *Journal de recherches atmosphériques*, Jan.-Mar. 1985, 19(1), p.47-59, In English with French summary. 8 refs.

Hoerber, H.

Sea ice, Air temperature, Heat balance, Wind direction, Ice air interface, Boundary layer, Antarctica—Weddell Sea.

The antarctic ice shelf edge region is a zone of rapid transition of such parameters as surface temperature and surface roughness. The resulting boundary layer modification during offshore wind conditions is documented through numerous aerological soundings taken in the southern Weddell Sea. Large oceanic heat losses and the atmospheric momentum budget are derived from temperature and wind profiles. An estimate of bulk transfer coefficients for the partly ice-covered coastal poly-

nya is derived. A one-dimensional mixed layer model, including both buoyancy and stress generated turbulence, is shown to represent well the observed boundary layer evolution. (Auth.)

40-2571

Observations of double arch formation in the Bering Strait.

Torgerson, L.J., et al, *Geophysical research letters*, Oct. 1985, 12(10), p.677-680, 6 refs.

Stringer, W.J.

Sea ice, Ice deformation, Ice dams.

40-2572

Ice flow velocity profile for Dye-3, Greenland.

Shoji, H., et al, *Geophysical research letters*, Dec. 1985, 12(12), p.797-800, 14 refs.

Langway, C.C., Jr.

Ice cores, Ice mechanics, Compaction, Ice creep, Greenland—Dye 3.

40-2573

On the dissolved surface oxygen supersaturation in the Arctic.

Top, Z., et al, *Geophysical research letters*, Dec. 1985, 12(12), p.821-823, 7 refs.

Martin, S., Becker, P.

Sea water freezing, Gas inclusions, Oxygen, Water chemistry.

40-2574

IHP Regional Working Group on Northern Research Basins.

Slaughter, C.W., Nov. 1984, 9p. + appends., Report to United States National Committee for Scientific Hydrology. Unpublished manuscript.

Naled, Flood forecasting, Hydrology, Lake ice, River ice, Meetings, International cooperation, Research projects, Snowmelt.

40-2575

[Proceedings]. Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983, [Calgary, Alta., 1983], var. p., For selected papers see 40-2576 through 40-2587.

Offshore drilling, Ice loads, Offshore structures, Icebergs, Meetings, Artificial islands, Ice conditions, Ice scoring, Boreholes, Sea ice distribution.

40-2576

Construction and operation of the Kalluk conical drilling unit.

Park, D.A., Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 11p. + figs.

Offshore structures, Offshore drilling, Ice conditions, Sea ice distribution, Ocean waves, Icebreakers.

40-2577

Ice related research and development leading to the design of ESSO's caisson retained island.

Stevens, G.S., et al, Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 11p. + figs., 18 refs.

Wood, K.N.

Ice conditions, Offshore structures, Ice mechanics, Ice override, Design criteria, Caissons, Offshore drilling, Ice loads.

40-2578

Use of concrete honeycomb for Arctic structures.

Wetmore, S.B., Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], c.24p.

Concrete structures, Offshore structures, Concrete strength, Ice conditions, Freeze thaw cycles, Artificial islands, Offshore drilling.

40-2579

Physical environment of the Beaufort Sea and its impact on operations and structures.

Pilkington, R., Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], c.24p.

Ice conditions, Offshore structures, Sea ice distribution, Artificial islands, Ships, Climatic factors, Offshore drilling, Environments, Visibility, Wind factors, Ocean waves, Beaufort Sea.

40-2580

Norman Wells project.

Deyell, J., Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 12p. + figs.

Oil wells, Offshore structures, Discontinuous permafrost, River ice, Cold weather construction, Pipelines, Slope protection, Dredging, Canada—Mackenzie River.

40-2581

Permafrost casing instrumentation.

Saint, S.R., Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 42p., 7 refs.

Permafrost, Well casings, Heat transfer, Design, Computer applications, Instruments.

40-2582

Alaska drilling and workovers: update on latest developments.

Grimes, K.J., Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 6p.

Tundra, Drilling, Freeze thaw cycles, Ecology, United States—Alaska—North Slope.

40-2583

Design considerations for a drilling rig for a caisson retained sand island in the Beaufort Sea.

Evenson, J., et al, Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 17p.

Freebairn, B.

Permafrost, Offshore drilling, Caissons, Artificial islands, Heat recovery, Drilling fluids, Design, Mud, Waste disposal, Temperature effects, Beaufort Sea.

40-2584

Floating fuel production facility for the Beaufort Sea.

Barnes, R.B., Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 21p.

Floating structures, Petroleum industry, Offshore structures, Tanker ships, Pipelines, Design, Ships, Loading, Moorings, Stabilization, Beaufort Sea.

40-2585

Canadian subsea completion systems.

Gibb, P., Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 9p. + 22 figs.

Ice scoring, Ocean bottom, Pipelines, Offshore structures, Ocean environments, Protection, Drilling.

40-2586

Risk and safety of offshore production systems with special emphasis on iceberg hazards.

Jordan, I.J., Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 12p. + figs., 12 refs.

Ice loads, Offshore structures, Ice pressure, Icebergs, Impact strength, Sea ice distribution, Fog, icing, Design criteria, Climatic factors, Iceberg towing, Countermeasures.

40-2587

Structural integrity of concrete production platforms for Hibernia.

Bobby, W., et al, Conference on Canadian Offshore Drilling and Downhole Technology (CODD), Edmonton, Alberta, Sep. 12-14, 1983. Proceedings, [Calgary, Alta., 1983], 11p. + 12 figs., 3 refs.

Russell, W.E., Joneidi, F., Padron, D.

Offshore structures, Icebergs, Ice loads, Ice solid interface, Impact strength, Design, Loads (forces), Ice strength, Ice volume.

40-2588

Heat and mass transfer in freezing peat. [Teplota i massopereenos v promerzaiushchikh torfianykh sistemakh].

Davidovskii, P.N., et al, Minsk, Nauka i tekhnika, 1985, 160p., In Russian with English table of contents enclosed. 177 refs.

Brovka, G.P.

Organic soils, Permafrost structure, Frozen fines, Phase transformations, Peat, Hydrothermal processes, Models, Frost penetration, Laboratory techniques, Soil water migration, Composition, Capillarity, Frost heave.

40-2589

Peculiarities of channel performance under winter conditions. [Osobennosti raboty kanalov v zimnikh usloviakh].

Karnovich, V.N., et al, Moscow, Energoatomizdat, 1986, 80p., In Russian with abridged English table of contents enclosed. 50 refs.

Novozhenin, V.D., Smirnov, E.A.

Bottom ice, Subglacial drainage, Channels (waterways), River diversion, River ice, Snowdrifts, Stream flow, Ice jams, Slush.

- 40-2590**  
Studying the consequences of human impacts on natural complexes. [Izucheniye posledstviy vozdeystviya cheloveka na prirodnye kompleksy]. Emel'yanov, A.G., ed. Kalinin, Universitet, 1983, 145p. In Russian. For selected paper see 40-2591  
Swamps, Land reclamation, Forest land, Snow surveys.
- 40-2591**  
Snow cover properties in geocomplexes of the Meshchera valley-outwash plain landscape (for land reclamation). [Svoystva snezhnogo pokrova geokompleksov dolinno-zandrovogo landshafta Meshchery (dlya ralonov osushitel'nykh melioratsiy)]. D'akonov, K.N., et al. Izucheniye posledstviy vozdeystviya cheloveka na prirodnye kompleksy (Studying the consequences of human impacts on natural complexes) edited by A.G. Emel'yanov, Kalinin, Universitet, 1983, p.28-35. In Russian. 4 refs.  
Ivanov, A.N.  
Land reclamation, Swamps, Drainage, Snow depth, Snow water equivalent, Snow surveys, Snow density, Landscape types, Plains, Valleys.
- 40-2592**  
Reinforced concrete structures for continental shelves. [Soozruheniya iz zhelezobetona dlya kontinental'nogo shelf'a]. Volkov, I.U.S., et al. Moscow, Strofizdat, 1985, 292p. In Russian with abridged English table of contents enclosed. 99 refs.  
Rybalov, I.I.  
Ice loads, Offshore structures, Concrete structures, Reinforced concretes, Ocean waves, Floating structures, Airports, Wind factors, Urban planning, Sea ice distribution, Buildings, Frost action, Electric power.
- 40-2593**  
Electrical freezing potentials and corrosion rates in clay sludge.  
Hanley, T.O., *Canadian geotechnical journal*, Nov. 1985, 22(4), p.599-604, 18 refs.  
Freezing potential (electrical), Soil freezing, Sludges, Corrosion, Clay soils, Unfrozen water content, Models.
- 40-2594**  
On a plausible explanation of the connection of point defect parameters with the melting point.  
Varotsos, P., et al. *Journal of physics and chemistry of solids*, 1986, 47(1), p.79-82, 19 refs.  
Varotsos, C., Hatjicantis, V., Lazaridou, M.  
Melting points, Enthalpy, Thermodynamics, Soil physics, Analysis (mathematics).
- 40-2595**  
Predicting two-dimensional steady-state soil freezing fronts using the CVBEM.  
Hromadka, T.V., II. *Journal of heat transfer*, Feb. 1986, 108(1), p.235-237, 9 refs.  
Soil freezing, Freezing points, Heat transfer, Freeze thaw cycles, Geothermy, Analysis (mathematics).
- 40-2596**  
U.S. Geological Survey reports on Alaska.  
White, E.R., comp. USGS Alaskan Geology Branch Tech. data bibliography No.6, June 1985, Menlo Park, 1985, 27p.  
Permafrost, Glaciology, Environments, Oceanography, Bibliographies.
- 40-2597**  
Problems of classifying gravitational slope processes. [Problemy klassifitsirovaniya sklonovykh gravitatsionnykh protsessov]. Churinov, M.V., ed. Moscow, Nauka, 1985, 204p. In Russian with abridged English table of contents enclosed. Refs. p.192-201.  
Tolstykh, E.A., ed.  
Slope processes, Classifications, Glacial hydrology, Engineering geology, Environmental protection, Landslides, Talus, Rock streams, Mudflows, Solifluction.
- 40-2598**  
Reforestation and forest protection in Karelia. [Voprosy lesovosstanovleniya i lesozashchity v Karelii]. Shubin, V.I., ed. Petrozavodsk, 1983, 115p. In Russian. For selected papers see 40-2599 through 40-2603. Refs. passim.  
Krutov, V.I., ed. Sokolov, A.I., ed.  
Taiga, Environmental protection, Cryogenic soils, Forestry, Revegetation, Soil formation, Plant ecology, Plant physiology, Ecosystems.
- 40-2599**  
Soil conditions of clear-cut areas in Karelia during the last decade. [Pochvennye usloviya vyrbok Karelii poslednego desyatiel'iya]. Fedorets, N.G., Voprosy lesovosstanovleniya i lesozashchity v Karelii (Reforestation and forest protection in Karelia) edited by V.I. Shubin, V.I. Krutov and A.I. Sokolov, Petrozavodsk, 1983, p.4-13. In Russian. 14 refs.  
Cryogenic soils, Soil composition, Taiga, Freeze thaw cycles, Lichens, Mosses, Forestry, Soil formation.
- 40-2600**  
Estimation of artificial revegetation of clear-cut areas. [Otsenka iskusstvennogo lesovosstanovleniya na vyrbokakh]. Shubin, V.I., et al. Voprosy lesovosstanovleniya i lesozashchity v Karelii (Reforestation and forest protection in Karelia) edited by V.I. Shubin, V.I. Krutov and A.I. Sokolov, Petrozavodsk, 1983, p.13-34. In Russian. 10 refs.  
Sokolov, A.I.  
Forestry, Revegetation, Cryogenic soils, Subarctic regions, Taiga.
- 40-2601**  
Cultivation of soils for forest cultures in clear-cut areas of the northwestern European USSR. Present state and prospects. [Obrabotka pochvy pod lesnyye kul'tury na vyrbokakh Zapadnoi chasti evropeiskogo Severa. Sostoyaniye i perspektivy]. Shubin, V.I., Voprosy lesovosstanovleniya i lesozashchity v Karelii (Reforestation and forest protection in Karelia) edited by V.I. Shubin, V.I. Krutov and A.I. Sokolov, Petrozavodsk, 1983, p.45-53. In Russian. 32 refs.
- 40-2602**  
Taiga, Plant ecology, Cryogenic soils, Soil composition, Swamps, Soil water migration, Forest land, Freeze thaw cycles.
- 40-2602**  
Afforestation and the formation of soil profiles on land affected by industrial activities. [Lesovosstanovlenie i formirovaniye pochvennogo profil'a na tekhnogennykh zemliakh]. Kuz'min, I.A., et al. Voprosy lesovosstanovleniya i lesozashchity v Karelii (Reforestation and forest protection in Karelia) edited by V.I. Shubin, V.I. Krutov and A.I. Sokolov, Petrozavodsk, 1983, p.71-78. In Russian. 13 refs.  
Strelkova, A.A.  
Forest land, Cryogenic soils, Revegetation, Soil composition, Forestry, Soil profiles.
- 40-2603**  
Appearance of seedlings and the preservation of pine seeds in soil in Karelia. [Poyavleniye vskhodov i sokhraneniye semian sosny v pochve v usloviyakh Karelii]. Sokolov, A.I., Voprosy lesovosstanovleniya i lesozashchity v Karelii (Reforestation and forest protection in Karelia) edited by V.I. Shubin, V.I. Krutov and A.I. Sokolov, Petrozavodsk, 1983, p.78-85. In Russian. 19 refs.
- 40-2604**  
Taiga, Cryogenic soils, Soil composition, Soil microbiology, Plant physiology, Soil moisture migration.
- 40-2604**  
Accounting for the ice- and thermal regime of pools and construction objects when building pumped-storage electric power plants. [Uchet ledovogo i termicheskogo rezhimov basseinov i sooruzheniy pri sozdani GAES]. Skladnev, M.F., et al. *Leningrad. Politehnicheskii institut. Trudy*, 1984, No.401, p.86-92. In Russian. 7 refs.  
Liapin, V.E., Sokolov, I.N.  
Hydraulic structures, Slopes, Ice accretion, Ice loads, Dams, Electric power.
- 40-2605**  
Changes of the ice regime in Swedish rivers due to the development of the hydro-electric power.  
Fremling, S., Inadvertent effects of man on the hydrological cycle. Edited by E. Hansen, Nordic IHD report, No.8, Oslo, 1975, p.80-83.  
Ice conditions, River ice, Water reserves, Lake water, Dams, Electric power, Water level, Human factors, Sweden.
- 40-2606**  
Changes in ice conditions in regulated Norwegian watercourses.  
Roen, S., Inadvertent effects of man on the hydrological cycle. Edited by E. Hansen, Nordic IHD report, No.8, Oslo, 1975, p.84-90.  
Ice conditions, River ice, Lake ice, Stream flow, Water level, Seasonal variations, Flow rate, Water temperature, Norway.
- 40-2607**  
Downstream transition of river ice jams.  
Beltaos, S., et al. *Journal of hydraulic engineering*, Feb. 1986, 112(2), p.91-110, 12 refs.  
Wong, J.  
Ice jams, River ice, Ice mechanics, Ice breakup, Grounded ice, Mathematical models.
- 40-2608**  
Flow resistance of river ice cover.  
Shen, H.T., et al. *Journal of hydraulic engineering*, Feb. 1986, 112(2), p.142-156, 16 refs.  
Yapa, P.D.  
River flow, Ice cover effect, Hydraulics, River ice, Flow rate, Mathematical models.
- 40-2609**  
Effects of brine content on the strength of frozen Otawa sand.  
Pharr, G.M., et al. *Cold regions science and technology*, Nov. 1985, 11(3), p.205-212, 15 refs.  
Merwin, J.E.  
Frozen ground strength, Saline soils, Brines, Sands, Compressive properties, Stress strain diagrams, Temperature effects.
- 40-2610**  
X-ray technique for observation of ice lens growth in partially frozen, saturated soil.  
Ishizaki, T., et al. *Cold regions science and technology*, Nov. 1985, 11(3), p.213-221, 16 refs.  
Yoneyama, K., Nishio, N.  
Ground ice, Ice lenses, Frost heave, Ice growth, Frozen ground mechanics, Soil water migration, X ray analysis, Ice pressure, Temperature effects, Tests.
- 40-2611**  
Ice penetration tests.  
Garcia, N.B., et al. *Cold regions science and technology*, Nov. 1985, 11(3), p.223-236, 6 refs.  
Farrell, D., Mellor, M.  
Ice cover strength, Military research, Projectile penetration, Impact strength, Flexural strength, Brittleness, Penetration tests.  
Exploratory tests of ice penetration were made by driving small blunt cylinders into semi-infinite ice at normal incidence. Three types of laboratory tests were made: (1) drop-weight impact (impact speed 1.4-3.1 m/s), (2) high-speed ballistic penetration (impact speed 83-434 m/s), (3) deep penetration at low speed (0.42-4.23 m/s). Penetration by indenters and projectiles could be characterized by the energetics of the process, with little variation of specific energy as penetration speed changed by orders of magnitude. For blunt penetrators entering ice at -5°C, specific energy was typically in the range 1.5-15 MJ/m<sup>2</sup>. Low speed tests provided data on penetration force (and energy) as a function of displacement. The test results were compared with other published laboratory data, and with field tests results for bigger projectiles.
- 40-2612**  
Observations on polygonal patterns in a Jurassic sandstone, Kohlan group, Yemen Arab Republic.  
El-Nakhel, H.A., *Cold regions science and technology*, Nov. 1985, 11(3), p.237-240, 7 refs.  
Tuudla, Polygonal topography, Cracks, Paleoclimatology, Frost action, Pleistocene, Yemen Arab Republic.
- 40-2613**  
Visco-elastic buckling analysis of floating ice sheets.  
Sjölind, S.-G., *Cold regions science and technology*, Nov. 1985, 11(3), p.241-246, 12 refs.  
Floating ice, Viscoelasticity, Loads (forces), Ice cover strength, Analysis (mathematics), Buckling.
- 40-2614**  
Stress-relieving techniques for cantilever beam tests in an ice cover.  
Frederking, R.M.W., et al. *Cold regions science and technology*, Nov. 1985, 11(3), p.247-253, 12 refs.  
Svec, O.J.  
Ice cover strength, Flexural strength, Ice loads, Ice solid interface, Bearing strength, Stresses, Tests.
- 40-2615**  
Statistical prediction of iceberg trajectories.  
Garrett, C., *Cold regions science and technology*, Nov. 1985, 11(3), p.255-266, 15 refs.  
Icebergs, Drift, Ice mechanics, Ocean currents, Offshore structures, Analysis (mathematics), Forecasting.
- 40-2616**  
Some strength features of natural snow surfaces that affect snow drifting.  
Martinelli, M., Jr., et al. *Cold regions science and technology*, Nov. 1985, 11(3), p.267-283, 9 refs.  
Orment, A.  
Snow strength, Snow hardness, Snow surface, Blowing snow, Loads (forces), Snowfall, Snowdrifts, Brittleness, Wind factors, Sunlight, Impact strength.

- 40-2617**  
Creep of polycrystalline ice.  
Ashby, M.F., et al, *Cold regions science and technology*, Nov. 1985, 11(3), p.285-300, 28 refs.  
Duval, P.  
Ice creep, Ice crystal structure, Ice deformation, Tensile properties, Analysis (mathematics), Plastic properties.
- 40-2618**  
Production of HSLA seamless steel pipes for offshore structures and line pipes by direct-quench and tempering.  
Iwasaki, Y., et al, *Iron and Steel Institute of Japan. Transactions*, 1985, (10), p.1059-1068, 10 refs.  
Kobayashi, K., Ueno, K., Koyama, Y.  
Steel structures, Steel structures, Cold weather tests, Pipes (tubes), Welding.
- 40-2619**  
Properties of heavy gauge steel plates for offshore structures.  
Nishizaki, H., et al, *Iron and Steel Institute of Japan. Transactions*, 1985, 25(10), p.B269.  
Offshore structures, Steel structures, Cold weather tests, Chemical composition, Tensile properties.
- 40-2620**  
Melting in rectangular enclosures: experiments and numerical simulations.  
Bénard, C., et al, *Journal of heat transfer*, Nov. 1985, 107(4), p.794-803, 30 refs.  
Gobin, D., Martinez, F.  
Heat transfer, Melting points, Solid phases, Convection, Phase transformations, Analysis (mathematics).
- 40-2621**  
Freezing in the presence of rotation.  
Nelson, J.S., et al, *Journal of heat transfer*, Nov. 1985, 107(4), p.804-811, 14 refs.  
Sparrow, E.M.  
Freezing, Heat transfer, Phase transformations, Solid phases, Analysis (mathematics).
- 40-2622**  
Transient simultaneous condensation and melting of a vertical surface.  
Galamba, D., et al, *Journal of heat transfer*, Nov. 1985, 107(4), p.812-818, 7 refs.  
Dhir, V.K.  
Melting, Condensation, Water vapor, Thermal conductivity, Saturation, Temperature distribution, Analysis (mathematics).
- 40-2623**  
Radar cross-sections of two cold icebergs.  
Rossiter, J.R., et al, *Iceberg research*, Oct. 1985, No.11, p.3-9, 7 refs.  
Currie, B.W., Lewis, E.O.  
Icebergs, Radar echoes, Reflectivity, Canada—Northwest Territories—Borden Peninsula.
- 40-2624**  
Formation of iceberg keel marks on the antarctic sea floor.  
Miller, R.G., et al, *Iceberg research*, Oct. 1985, No.11, p.10-12, 3 refs.  
Barnes, P.W.  
Icebergs, Ice scoring, Antarctica—Moubray Bay.  
A grounded iceberg in Moubray Bay near Cape Hallett is described. It appears that the toe of the berg was grounded since it rotated in alternating directions 130-180 degrees. An estimate of current direction and velocity was obtained when sea ice on which they were walking gave way under a colleague. Rescue was made with difficulty because the current forced the man's legs upward to the underside of the ice. Given these observations, several scenarios are suggested for the formation of bed forms on the sea floor from the grounded ice keels.
- 40-2625**  
U.S. Coast Guard use of the Argos Data Collection System for monitoring and tracking of icebergs.  
Hayes, R.M., *Iceberg research*, Oct. 1985, No.11, p.13-15, 4 refs.  
Icebergs, Drift stations, Ocean currents, Data transmission.
- 40-2626**  
Geometrical aspects of sorted patterned ground in recurrently frozen soil.  
Gleason, K.J., et al, *Science*, Apr. 11, 1986, 232(4747), p.216-220, 17 refs.  
Krantz, W.B., Caine, N., George, J.H., Gunn, R.D.  
Frozen ground, Patterned ground, Ground thawing, Ground ice, Ice melting, Models.
- 40-2627**  
Report of the 25th Soviet Antarctic Expedition for 1979-1980. [Itogi rabot sezonnogo sostava dvadtsat' piat' let Sovetskoi Antarkticheskoi Ekspeditsii (1979/80 g.)].  
Kornilov, N.A., et al, *Sovetskaiia antarkticheskaiia ekspeditsiia. Informatsionnyi biulleten'*, 1985, No.107, p.10-16, In Russian.  
Kozlovskii, A.M.  
Ice cores, Ice shelves, Antarctica—Vostok Station.  
The outline of the 25th Soviet Antarctic Expedition for the season 1979-1980 is presented as follows: geophysical and geological investigations in the Weddell Sea coastal area; investigations under the International Antarctic Glaciological Program and the Geophysical Polygon in Antarctica project; research conducted on board ships cruising in antarctic waters; resupplying of the Soviet antarctic stations and bases; activities related to the construction of Russkaya Station at Cape Burks and those in connection with the first flight between Moscow and Molodezhnaya Station of the laboratory-aircraft Il-18D.
- 40-2628**  
Glaciological and geodetic work on Hays Glacier in 1977-1978. [Gliatsiogeodezicheskiiye raboty na lednike Kheta v 1977/78 g].  
Hoyer, R., et al, *Sovetskaiia antarkticheskaiia ekspeditsiia. Informatsionnyi biulleten'*, 1985, No.107, p.27-32, 12 refs., In Russian.  
Maier, S., Reppchen, G.  
Geodetic surveys, Glacier surfaces, Snow accumulation, Glacier oscillation, Firn, Glacier flow, Glacier surveys, Antarctica—Hays Glacier.  
Results are reported of the follow-up of investigations begun in 1972 on the Hays Outlet Glacier 15 km east of Molodezhnaya Station, continuing in 1975-1976 200 km further, and ending in 1978. Extension and repetition measurements are given. Glacier motion tables and scheme are presented, showing horizontal and vertical velocities in m/year; direction; location of observation points during the 6-years research; ice-free areas; and glacier fissures, thickness, snow accumulation, and firn temperature and density. It is noted that Hays Glacier displays a constant calving rhythm, in contrast to Campbell Glacier, southwest of Molodezhnaya, which shows a calving rhythm differentiated in time, oscillating between 0.5-0.1/year. Hays Glacier is at least 10,000 years old.
- 40-2629**  
Surface water dynamics in eastern Sodruzhestvo Sea from iceberg drift observations. [Nekotorye cherty dinamiki poverkhnostnykh vod v vostochnoi chasti moria Sodruzhestva po nabludeniiam za drefim aisbergov].  
Botnikov, V.N., et al, *Sovetskaiia antarkticheskaiia ekspeditsiia. Informatsionnyi biulleten'*, 1985, No.107, p.59-62, 6 refs., In Russian.  
Dmitrash, A.Zh.  
Icebergs, Ocean currents, Drift, Antarctica—Prydz Bay.  
Study of 80 images of the course of two drifting icebergs in a northeastern section of Prydz Bay, taken between Jan. 15, 1978, and Apr. 9, 1979, is reported. The first iceberg, 34 x 26 km in size, moved on a westerly course at 3.2-6.5 mi/d in mid ocean, increasing the speed to 7.2 mi/d 10 mi from the coast. The second iceberg, 37 x 24 km in size, was observed Dec. 10-15, 1978, in the eastern section of Sodruzhestvo Sea between 350 and 150 km off the coast, drifting in a southeasterly direction at 5.5-7.9 mi/d. On Dec. 15-29 its course changed abruptly toward the southwest at 1.5-3.6 mi/d. In the next 40 days the drift changed its course again, progressing in a general northeastern direction at 0.8 mi/d.
- 40-2630**  
Study of propulsion system operations of the research vessel *Mikhail Somov* navigating through antarctic ice. [Issledovanie raboty dvizhitel'nogo kompleksa NES *Mikhail Somov* v usloviakh ledovogo plavaniia v Antarktike].  
Svistunov, B.N., *Sovetskaiia antarkticheskaiia ekspeditsiia. Informatsionnyi biulleten'*, 1985, No.107, p.75-80, In Russian.  
Sea ice.  
Interaction between the propeller of the moving ship and sea ice was studied during the 1981-1982 season. No such interaction was noted in flat surfaced ice up to 70 cm thick, nor with large ice pieces 80-90 cm thick. This is attributed to the ship's slow speed of 3-4 knots. In thicker ice, the propeller interacted with ice in both forward and reverse motion, achieving its maximum level in the latter, as in the former the propeller is shielded by the ship. Interaction data, including description of the ice conditions, are tabulated. The main characteristics of the vessel *Mikhail Somov* are presented, giving its proportions and the list and measurements of its equipment.
- 40-2631**  
BERGSEARCH '84: Assessment of airborne imaging radars for the detection of icebergs.  
Rossiter, J.R., et al, *Environmental Studies Revolving Funds. Report*, Sep. 1985, No.16, 321p., With French summary. Refs. passim.  
Icebergs, Ice detection, Airborne radar, Remote sensing, Accuracy, Ice navigation, Offshore structures.
- 40-2632**  
Climatology of severe storms affecting coastal areas of eastern Canada.  
Brown, R.D., et al, *Environmental Studies Revolving Funds. Report*, Feb. 1986, No.20, 233p., Refs. p.229-233. With French summary.  
Roebber, P., Walsh, K.  
Climatology, Ice cover effect, Storms, Ocean waves, Shores, Wind factors, Meteorological data, Canada.
- 40-2633**  
Modeling of soil processes. [Modelirovanie pochvennykh protsessov].  
Pachepskii, I.A.A., ed, Pushchino, 1985, 151p., In Russian. For selected papers see 40-2634 through 40-2636. Refs. passim.  
Meltwater, Cryogenic soils, Heat transfer, Land reclamation, Mass transfer, Mathematical models, Soil freezing, Soil water migration, Permeability, Freeze thaw cycles, Soil chemistry, Phase transformations, Soil composition.
- 40-2634**  
Theoretical bases and mathematical modeling of meltwater retention in agricultural fields. [Teoreticheskie osnovy i matematicheskoe modelirovanie zaderzhanii tal'kikh vod na sel'skokhoziaistvennykh pol'kakh].  
Kaliuzhnyi, I.L., et al, *Modelirovanie pochvennykh protsessov* (Modeling of soil processes) edited by I.A.A. Pachepskii, Pushchino, 1985, p.37-44, In Russian. 6 refs.  
Lavrov, S.A., Pavlova, K.K.  
Snow retention, Freeze thaw cycles, Snow water equivalent, Meltwater, Snow cover distribution, Seepage, Porosity.
- 40-2635**  
Adequacy test of a model simulating moisture transfer in space between drains. [Proverka adekvatnosti modeli vlagoperenosa v mezhdrennom prostranstve].  
Nerpina, N.S., et al, *Modelirovanie pochvennykh protsessov* (Modeling of soil processes) edited by I.A.A. Pachepskii, Pushchino, 1985, p.44-51, In Russian. 7 refs.  
Land reclamation, Mathematical models, Drainage, Drains, Soil water migration, Soil composition, Clays, Seal, Permeability.
- 40-2636**  
Mathematical models of mass transfer in ground and soils subject to melioration. [Matematicheskie modeli massoperenosa v melioriruemnykh pochvogruntakh].  
Pen'kovskii, V.I., et al, *Modelirovanie pochvennykh protsessov* (Modeling of soil processes) edited by I.A.A. Pachepskii, Pushchino, 1985, p.66-76, In Russian. 35 refs.  
Emikh, V.N.  
Land reclamation, Saline soils, Irrigation, Drainage, Mass transfer, Soil water migration, Soil chemistry, Mathematical models.
- 40-2637**  
Pipeline transportation (Physico-technical and technical-economic analysis). [Magistral'nyi truboprovodnyi transport (fiziko-tekhnicheskii i tekhniko-ekonomicheskii analiz)].  
Krivoshein, B.L., et al, Moscow, Nauka, 1985, 237p., In Russian with abridged English table of contents enclosed. Refs. passim.  
Tugunov, P.I.  
Gas pipelines, Environmental impact, Petroleum industry, Petroleum transportation, Permafrost beneath structures, Taiga, Paludification.
- 40-2638**  
Ways of solving the problem of rational use and protection of natural resources in Leningrad and the Leningrad region. [Puti resheniia voprosov ratsional'nogo ispol'zovaniia i okhrany prirodnykh resursov Leningrada i Leningradskoi oblasti].  
Voropaeva, G.M., ed, Leningrad, 1984, 200p., In Russian. For selected papers see 40-2639 and 40-2640. Refs. passim.  
Snow composition, Sea ice distribution, Pollution, Hydraulic structures, Air pollution, Ice navigation, Snow surveys, Wind factors, Ice cover thickness, Analysis (mathematics).

40-2639

**Peculiarities of ice regime in areas of hydraulic constructions.** [Osobennosti ledovogo rezhima v racione stroitel'stva gidrotekhnicheskikh sooruzhenij], Drabkin, V.V., Puti resheniya voprosov ratsional'nogo ispol'zovaniya i okhrany prirodnykh resursov Leningrada i Leningradskoi oblasti (Ways of solving the problem of rational use and protection of natural resources in Leningrad and the Leningrad region) edited by G.M. Voropaeva, Leningrad, 1984, p.121-124, In Russian.

**Sea ice distribution, Hydraulic structures, Ice conditions, Ice navigation, Ice cover thickness, Design, Fast ice.**

40-2640

**Influence of hydrometeorological conditions on eolian pollution of snow cover.** [Vliyanie gidrometeorologicheskikh uslovij na eolovoe zagnazanie snezhnogo pokrova], Dronov, V.N., et al, Puti resheniya voprosov ratsional'nogo ispol'zovaniya i okhrany prirodnykh resursov Leningrada i Leningradskoi oblasti (Ways of solving the problem of rational use and protection of natural resources in Leningrad and the Leningrad region) edited by G.M. Voropaeva, Leningrad, 1984, p.157-160, In Russian.

**Air pollution, Eolian soils, Soil pollution, Wind factors, Snow surveys.**

40-2641

**Formation and prediction of hydrochemical regime of water reservoirs in the northeastern USSR.** [Formirovanie i prognozirovaniye gidrokhimicheskogo rezhima vodokhranilishch Severo-Vostoka SSSR], Labutina, T.M., Yakutsk, SO AN SSSR, 1985, 115p., In Russian with English table of contents enclosed. 122 refs.

**Plankton, Water reserves, Lakes, Plant ecology, Hydrothermal processes, Permafrost beneath lakes, Ice conditions, Water chemistry, Water composition.**

40-2642

**Victoria Land Basin: part of an extended crustal complex between East and West Antarctica.**

Kim, Y., et al, Reflection seismology: the continental crust, Geodynamics series Vol.14, Washington, D.C., American Geophysical Union, 1986, p.323-330, Refs. p.329-330.

McGinnis, L.D., Bowen, R.H.

**Sea ice, Subglacial observations, Seismic reflection, Seismic refraction, Antarctica—Transantarctic Mountains, Antarctica—McMurdo Sound, Antarctica—Victoria Land.**

Seismic reflection soundings to 12 seconds two-way time in the southern Victoria Land Basin of the western Ross Sea indicate the presence of a deep sedimentary basin overlying a thinned crust. In addition to reflection data, seismic refraction and gravity studies provide control on the configuration of crystalline basement and depth to the Mohorovicic Discontinuity. Dipping reflectors suggest a basin depth of 13 km and a 200 km long reversed refraction profile provides a MOHO depth of 21 km below sea level. The basin contains undeformed sediments dropping seaward and is similar to continental margins which were formed by rifting. Two areas of normal faulting bound the rifted basin on the east and west. Flat-lying glacial marine sediments with few internal reflections cover the basin. Present day high heat flow and active volcanism suggest that the basin beneath McMurdo Sound is undergoing a second phase of rifting. (Auth. mod.)

40-2643

**Polar class antarctic 1984 ice impact tests.**

Daley, C., et al, *Transport Canada Report*, Mar. 1985, TP 7184E, 188p., 8 refs.

Brown, R., St. John, J., Myers, J., Arctic Canada Ltd. **Icebreakers, Ice loads, Ice pressure, Sea ice, Impact tests.**

This report presents the results of the local ice loads data collection aboard USCGC Polar Sea in Antarctica in January 1984. The measurement system was developed for the Ship Structure Committee and the Canadian Ministry of Transport to be used in the Alaskan Arctic. The objective was to gather data in thick level ice to be used for theoretical model validation and as a comparison with the ice pressures experienced in the Arctic. 309 impacts were recorded in ice that varied in thickness from 3 to 6 ft. The impacts were well centered on the panel. Vessel speeds varied from 1 to 10.5 kts. Highest single sub-panel pressures were about 600 psi and peak measured force was 270 LT. These values are one-third to one-half of levels measured in the Arctic. Measured forces are compared with various theories with good agreement. A statistical analysis of the extremes was conducted to provide information on the type of distribution that was appropriate. A Gumbel distribution appears appropriate for much of the data. Intermediate data are acquired to predict long return periods, however. (Auth.)

40-2644

**Electromagnetic induction measurements in permafrost terrain for detecting ground ice and ice-rich soils.**

Kawasaki, K., et al, *U.S. Federal Highway Administration Report*, Dec. 1984, HFWA-AK-85-12, 193p., Refs. p.188-190.

Osterkamp, T.E.

**Permafrost physics, Electromagnetic properties, Ice detection, Ground ice, Remote sensing, Soil strength, Geophysical surveys, Foundations.**

40-2645

**Laboratory testing of an oil-skimming bow in broken ice.**

Abdelnour, R., et al, *Environmental Studies Revolving Funds Report*, Jan. 1986, No.13, 56p., With French summary. 4 refs.

Johnstone, T., Howard, D., Nisbett, V.

**Oil spills, Oil recovery, Ice conditions, Countermeasures, Tests, Temperature effects.**

40-2646

**Enhancement of the radar detectability of icebergs.**

Ryan, J.P., *Environmental Studies Revolving Funds Report*, Jan. 1986, No.22, 83p., With French summary. 24 refs.

**Icebergs, Ice detection, Radar echoes, Backscattering, Wind factors, Analysis (mathematics).**

40-2647

**Glaciological studies in Norway, 1983.** [Glaciologiske undersøkelser i Norge 1983],

Roland, E., et al, *Norway. Vassdrags- og energiverk. Hydrologisk avdeling. Rapport*, 1986, No.1-86, 52p.

+ map, In Norwegian with English summary. 6 refs. Haagenesen, N.

**Glacier mass balance, Snow depth, Snow cover distribution, Snow density, Glacier surfaces, Glacial lakes, Glacier ablation, Statistical analysis, Mountains, Seasonal variations, Sediment transport, Norway.**

40-2648

**Effect of lake regulation on local climate.**

Rodhe, B., Inadvertent effects of man on the hydrological cycle: a Nordic case book. Edited by E. Hansen (Nordic IHD report, No.8), 1975, p.94-98.

**Lake water, River flow, Climatic changes, Human factors, Water temperature, Water storage, Drainage, Fog.**

40-2649

**Assessing the impact of climatic change in cold regions.**

Parry, M.L., ed, International Institute for Applied Systems Analysis, Laxenburg, Austria. Summary report SR-84-1, 1984, 42p., 32 refs.

Carter, T.R., ed.

**Climatic changes, Permafrost thermal properties, Tundra, Polar regions, Mountains, Cold tolerance, Water supply, Snow line, Agriculture.**

40-2650

**Submersible observations and origin of an iceberg pit on the Grand Banks of Newfoundland.**

Barrie, J.V., et al, *Canada. Geological Survey. Paper*, 1986, No.86-1A, p.251-258, 26 refs., With French summary.

**Marine geology, Bottom topography, Icebergs, Paleoclimatology, Ocean bottom, Canada—Newfoundland—Grand Bank.**

40-2651

**Ice flow trends and drift composition, Flowers River area, Labrador.**

Klassen, R.A., et al, *Canada. Geological Survey. Paper*, 1986, No.86-1A, p.697-702, 10 refs., With French summary.

Bolduc, A.M.

**Drift, Ice mechanics, River ice, Geology, Bottom sediment, Chemical analysis, Canada—Labrador—Flowers River.**

40-2652

**Ice flow directions and drift composition, central Labrador.**

Thompson, F.J., et al, *Canada. Geological Survey. Paper*, 1986, No.86-1A, p.713-717, 19 refs., With French summary.

Klassen, R.A.

**Drift, Ice mechanics, Bottom sediment, Bottom topography, Geology, Canada—Labrador.**

40-2653

**Vegetation-geology-climate relationships of western Melville Island, District of Franklin.**

Edlund, S.A., *Canada. Geological Survey. Paper*, 1986, No.86-1A, p.719-726, 16 refs., With French summary.

**Vegetation, Climate factors, Soil composition, Geology, Polar regions, Altitude, Canada—Melville Island.**

40-2654

**Fifty years (1935 to 1985) of coastal retreat west of Tuktoyaktuk, District of Mackenzie.**

Mackay, J.R., *Canada. Geological Survey. Paper*, 1986, No.86-1A, p.727-735, 27 refs., With French summary.

**Shore erosion, Shoreline modification, Ice wedges, Pingos, Ground ice, Thermokarst development, Thermal effects, Canada—Northwest Territories—Tuktoyaktuk.**

40-2655

**Coastal characteristics, east-central Ellesmere Island, District of Franklin.**

Krawetz, M.T., et al, *Canada. Geological Survey. Paper*, 1986, No.86-1A, p.749-754, 6 refs., With French summary.

McCann, S.B.

**Coastal topographic features, Ice cover effect, Tides, Sea ice, Canada—Northwest Territories—Ellesmere Island.**

40-2656

**Marine geological program in the Byam Martin Channel-Longheed Island region, District of Franklin.**

Maclean, B., et al, *Canada. Geological Survey. Paper*, 1986, No.86-1A, p.769-774, 3 refs., With French summary.

Vilks, G.

**Marine geology, Bottom sediment, Ice cover thickness, Core samplers, Soil texture, Canada—Byam Martin Channel.**

40-2657

**Optimizing technological parameters of underground mines.** [Optimizatsiya parametrov tekhnologii podzemnykh rudnikov],

Shemiakin, E.I., ed, Novosibirsk, 1984, 126p., In Russian. For selected paper see 40-2658. 5 refs.

**Mine shafts, Quarries, Rock excavation, Continuous permafrost.**

40-2658

**Selecting the boundary between open and underground mining excavations in northern regions.** [Vybor granitsy mezhdu otkrytymi i podzemnymi gornymi rabotami dlia mestorozhdenij Severa],

Skuba, V.N., et al, Optimizatsiya parametrov tekhnologii podzemnykh rudnikov (Optimizing technological parameters of underground mines) edited by E.I. Shemiakin, Novosibirsk, 1984, p.105-112, In Russian. 5 refs.

**Chugunov, I.U.D., Kirzhner, F.M. Mine shafts, Rock excavation, Quarries, Continuous permafrost, Analysis (mathematics).**

40-2659

**Statistics of coarsening in water-saturated snow.**

Colbeck, S.C., *Acta metallurgica*, Mar. 1986, 34(3), MP 2015, p.347-352, With French and German summaries. 14 refs.

**Snow water content, Particle size distribution, Slush, Wet snow, Saturation, Statistical analysis.**

The particle size distributions in water-saturated snow are distinctly log-normal at all times. The rate of increase of the average volume decreases somewhat with time. Both of these conclusions are contrary to the LSW theory, which should apply to this system. Also, the particles are distinctly spheroidal, probably prolate. These discrepancies might be explained by extending the LSW theory to nonspherical particles with waterparticle contacts. When normalized to the mean the distribution is invariant with only the mean changing with time.

40-2660

**Repaving a bridge in subfreezing weather. Better roads.** Nov. 1985, 55(11), p.38.

**Bridges, Paving, Cold weather construction, Winter concreting.**

40-2661

**Shock therapy: a new system uses shock waves to shed ice.**

Horne, T.A., *AOPA pilot*, Jan. 1986, 29(1), p.35-36.

**Aircraft icing, Ice removal, Shock waves, Electromagnetic properties, Chemical ice prevention, Countermeasures.**

40-2662

**Model for winter heat loss in uncovered clarifiers.**

Wall, D.J., et al, *Journal of environmental engineering*, Feb. 1986, 112(1), p.123-138, 5 refs.

Petersen, G.

**Heat loss, Waste treatment, Water treatment, Ice cover effect, Heat transfer, Water temperature, Water flow, Models, Tanks (containers), Mathematical factors.**

- 40-2663**  
Ice sheet indentation resistance in the creep domain. Ladanyi, B., *Journal of energy resources technology*, Mar. 1986, 108(1), p.25-28, 24 refs.  
Ice pressure, Offshore structures, Ice creep, Ice mechanics, Ice sheets, Ice cover strength, Ice cover thickness, Strains, Piles, Analysis (mathematics), Velocity.
- 40-2664**  
Coefficient of friction between sea ice and various materials used in offshore structures. Saeki, H., et al, *Journal of energy resources technology*, Mar. 1986, 108(1), p.65-71, 9 refs.  
Ice friction, Offshore structures, Ice solid interface, Construction materials, Sea ice, Velocity, Surface roughness, Metal ice friction, Concrete structures, Ice temperature, Stresses.
- 40-2665**  
Geography of Taymyr lakes. (Geografiia ozer Taymyra). Adamenko, V.N., ed, Leningrad, Nauka, 1985, 224p., In Russian with abridged English table of contents enclosed. Refs. p.213-219.  
Egorov, A.N., ed.  
Lake ice, Permafrost hydrology, Permafrost beneath lakes, Tundra, Watersheds, Drill core analysis, Bottom sediment, Subarctic regions, Snow accumulation, Hydrothermal processes, Permafrost hydrology, Surveys, Heat balance, Mass balance, Measuring instruments, USSR—Taymyr Peninsula.
- 40-2666**  
Environmental impact of human activities. (Problemy antropogennogo vozdeistviia na okruzhaiushchuiu sredy). P'iaichenko, N.I., ed, Moscow, Nauka, 1985, 144p., In Russian. For selected papers see 40-2667 through 40-2670. Refs. passim.  
Peat, Soil pollution, Land reclamation, Soil erosion, Oil recovery, Petroleum transportation, Taiga, Organic soils, Cryogenic soils, Continuous permafrost, Paludification, Drainage.
- 40-2667**  
Geochemical-landscape maps for predicting possible degradation of environments from oil recovery and transportation. (Prognoznye landshaftno-geokhimicheskie karty vozmozhnosti degradatsii prirodnoi sredy pri dobyche i transportirovke nefi). Glazovskaia, M.A., et al, Problemy antropogennogo vozdeistviia na okruzhaiushchuiu sredy (Environmental impact of human activities) edited by N.I. P'iaichenko, Moscow, Nauka, 1985, p.12-18, In Russian. 3 refs.  
Petroleum products, Drilling, Oil recovery, Soil pollution, Petroleum transportation, Taiga, Paludification, Mapping.
- 40-2668**  
Causes of lowered fertility of old cultivated peat soils in the European part of the North. (Nekotorye prichiny snizheniia plodorodiia staropakhotnykh torfiannykh pochv v usloviakh Evropeiskogo Severa). Sin'kevich, E.I., Problemy antropogennogo vozdeistviia na okruzhaiushchuiu sredy (Environmental impact of human activities) edited by N.I. P'iaichenko, Moscow, Nauka, 1985, p.73-79, In Russian. 20 refs.  
Peat, Organic soils, Land reclamation, Soil pollution, Nutrient cycle, Soil chemistry.
- 40-2669**  
Swamp drainage and environmental protection. (Osushenie bolot i okhrana prirody). P'iaichenko, N.I., Problemy antropogennogo vozdeistviia na okruzhaiushchuiu sredy (Environmental impact of human activities) edited by N.I. P'iaichenko, Moscow, Nauka, 1985, p.79-83, In Russian. 21 refs.  
Active layer, Land reclamation, Permafrost hydrology, Swamps, Drainage, Peat, Evaporation, Organic soils, Subarctic regions.
- 40-2670**  
Environmental protection in the North. (Okhrana prirody Severa). Kriuchkov, V.V., Problemy antropogennogo vozdeistviia na okruzhaiushchuiu sredy (Environmental impact of human activities) edited by N.I. P'iaichenko, Moscow, Nauka, 1985, p.124-131, In Russian. 4 refs.  
Continuous permafrost, Environmental protection, Soil erosion, Soil pollution, Vegetation, Thermokarst, Tundra, Taiga, Forest tundra.
- 40-2671**  
Taiga soils of the Komi ASSR and their fertility. (Taezhnye pochvy Komi ASSR i ikh plodorodie). Zaboieva, I.V., ed, Akademiia nauk SSSR. Komi filial. Trudy, No.71, Syktyvkar, 1985, 127p., In Russian. For selected papers see 40-2672 and 40-2673. Refs. passim.  
Active layer, Cryogenic soils, Podsol, Forest soils, Taiga, Soil profiles, Soil composition, Soil water, Soil chemistry, Nutrient cycle, Soil temperature.
- 40-2672**  
Temperature regime of cultivated and virgin soils in the north-taiga subzone of the Komi ASSR. (Temperaturnyi rezhim tselinnykh i osvoennykh pochv severotaezhnoi podzony Komi ASSR). Kazakov, V.G., Akademiia nauk SSSR. Komi filial. Trudy, No.71, Taezhnye pochvy Komi ASSR i ikh plodorodie (Taiga soils of the Komi ASSR and their fertility) edited by I.V. Zaboieva, Syktyvkar, 1985, p.76-89, In Russian. 8 refs.  
Peat, Organic soils, Soil temperature, Podsol, Arctic regions, Snow cover effect, Cryogenic soils, Slope orientation, Soil composition.
- 40-2673**  
Bioproductivity and chemical element cycles in pine forests of northern taiga. (Bioproduktivnost' i krugovorot khimicheskikh elementov v el'nikе severnoi taigi). Rusanova, G.V., et al, Akademiia nauk SSSR. Komi filial. Trudy, No.71, Taezhnye pochvy Komi ASSR i ikh plodorodie (Taiga soils of the Komi ASSR and their fertility) edited by I.V. Zaboieva, Syktyvkar, 1985, p.90-102, In Russian. 8 refs.  
Sloboda, A.V.  
Continuous permafrost, Active layer, Taiga, Biomass, Soil temperature, Soil composition, Soil chemistry, Nutrient cycle.
- 40-2674**  
Equilibrium-line altitudes and paleoenvironment in the Merchants Bay area, Baffin Island, N.W.T., Canada. Hawkins, F.F., *Journal of glaciology*, 1985, 31(109), p.205-213, 29 refs., With French and German summaries.  
Glacier mass balance, Ice edge, Moraines, Paleoclimatology, Altitude, Environments, Statistical analysis, Canada—Northwest Territories—Baffin Island.
- 40-2675**  
Towards identification of optimum radar parameters for sea-ice monitoring. Kim, Y.-S., et al, *Journal of glaciology*, 1985, 31(109), p.214-219, 19 refs., With French and German summaries.  
Moore, R.K., Onstott, R.G., Gogineni, S.  
Ice physics, Sea ice, Radar echoes, Microwaves, Surface roughness, Ice salinity, Backscattering, Ice temperature, Ice density, Air entrainment, Bubbles.
- 40-2676**  
Till fabric and deformational structures in drumlins near Waukesha, Wisconsin, U.S.A. Stanford, S.D., et al, *Journal of glaciology*, 1985, 31(109), p.220-228, 59 refs., With French and German summaries.  
Mickelson, D.M.  
Glacial deposits, Geomorphology, Landforms, Subglacial observations, Glacier flow, Sands, Sediments, Soil structure, United States—Wisconsin—Waukesha.
- 40-2677**  
DeltaD-DeltaO-18 relationships in ice formed by subglacial freezing: paleoclimatic implications. Souchez, R.A., et al, *Journal of glaciology*, 1985, 31(109), p.229-232, 12 refs., With French and German summaries.  
Groote, J.M. de.  
Freezing, Slopes, Glacier beds, Oxygen isotopes, Subglacial observations, Ice temperature, Isotope analysis, Ice solid interface, Paleoclimatology, Ice cores, Computer applications.
- 40-2678**  
Preliminary assessment of the potential application of glacioclimatic investigations on Heard Island, South Indian Ocean. Spencer, M.J., et al, *Journal of glaciology*, 1985, 31(109), p.233-236, 19 refs., With French and German summaries.  
Mayewski, P.A., Lyons, W.B., Hendy, M.R.  
Snow composition, Mass balance, Snow impurities, Heard Island.  
Analyses of fluoride, chloride, sodium, sulfate, bromide, nitrate, and iron from a 3 m snow pit on Heard I., collected at an elevation of 2450, m are used to assess the potential of glacioclimatic studies on Heard I. glaciers. Sources for the chemical
- species are identified and, in particular, chloride, sodium, and sulfate are found to be useful seasonal indicators. The total record measured is believed to be less than one mass-balance year (Auth.).
- 40-2679**  
Drift-ice abrasion marks along rocky shores. Dionne, J.C., *Journal of glaciology*, 1985, 31(109), p.237-241, 48 refs., With French and German summaries.  
Drift, Ice scoring, Abrasion, Striations, Shores, Topographic features, Rocks.
- 40-2680**  
Creep buckling of ice shelves and the formation of pressure rollers. Collins, I.F., et al, *Journal of glaciology*, 1985, 31(109), p.242-252, 26 refs., With French and German summaries.  
McCrae, I.R.  
Ice models, Ice shelves, Pressure ridges, Ice deformation, Ice surface, Strain tests, Ice creep.  
Much of the surface of an ice shelf is covered with series of undulations, or pressure rollers, which are particularly noticeable in the neighborhood of ice rises or ice streams. This paper investigates the stability of ice shelves to perturbations in the background stress and strain-rate distributions. The perturbation analysis is based on Glen's creep law and leads to a continuous eigenvalue problem for the wavelength of the disturbance as a function of growth-rate. It is shown that, provided these strain-rates are sufficiently compressive, waves of the type observed can be expected to form. It is shown that lateral extensional strain-rates have a destabilizing effect and pressure rollers are more likely to form when these are present. Comparison of predicted wavelengths is made with available field data. (Auth. mod.)
- 40-2681**  
Dielectric behaviour of firn and ice from the Antarctic Peninsula, Antarctica. Reynolds, J.M., *Journal of glaciology*, 1985, 31(109), p.253-262, Refs. p.261-262., With French and German summaries.  
Ice relaxation, Dielectric properties, Firn, Ice thermal properties, Thermal conductivity, Antarctica—Antarctic Peninsula.  
Dielectric experiments have been undertaken at temperatures between -2 and -70 C in the frequency range 10Hz to 100 kHz on 14 firn and ice samples retrieved from the Antarctic Peninsula. This investigation shows that the dielectric behavior of polar samples from the Antarctic Peninsula is very similar to that of polar firn and ice from Greenland and from elsewhere in Antarctica. In contrast, temperate samples from the Antarctic Peninsula have relaxation times up to ten times shorter for a given temperature between -20 and -70 C, and have higher values of high-frequency conductivity than those of polar samples. Consequently, the thermal regime (temperature or polar) can be distinguished by the dielectric behavior of the samples, which should not be warmed to above -10 C for risk of irreversibly altering their dielectric behavior. (Auth. mod.)
- 40-2682**  
On supercooling and ice formation in turbulent seawater. Omstedt, A., *Journal of glaciology*, 1985, 31(109), p.263-271, 19 refs., With French and German summaries.  
Ice formation, Supercooling, Sea water freezing, Frazil ice, Boundary layer, Buoyancy, Mathematical models, Turbulent flow, Temperature gradients.
- 40-2683**  
History of jokulhlaups from Strandline Lake, Alaska, U.S.A. Sturm, M., et al, *Journal of glaciology*, 1985, 31(109), p.272-280, 12 refs., With French and German summaries.  
Benson, C.S.  
Glacial lakes, Ice dams, Subglacial drainage, Calving, Floods, United States—Alaska—Strandline Lake.
- 40-2684**  
Mathematical model of ice sheets and the calculation of the evolution of the Greenland ice sheet. Grigorian, S.S., et al, *Journal of glaciology*, 1985, 31(109), p.281-292, 26 refs., With French and German summaries.  
Buianov, S.A., Krass, M.S., Shumskii, P.A.  
Ice sheets, Ice volume, Ice temperature, Ice cover thickness, Ice models, Ice melting, Climatic factors, Mathematical models, Forecasting, Mass balance, Maps, Greenland.
- 40-2685**  
On the analysis of longitudinal stress in glaciers. McMeeking, R.M., et al, *Journal of glaciology*, 1985, 31(109), p.293-302, 17 refs., With French and German summaries.  
Johnson, R.E.  
Glacier ice, Shear stress, Basal sliding, Glacier beds, Topographic features, Strains, Analysis (mathematics), Slope orientation.

- 40-2686**  
Medial moraines of the Haut Glacier d'Arolla, Valais, Switzerland: debris supply and implications for moraine formation.  
Gomez, B., et al, *Journal of glaciology*, 1985, 31(109), p.303-307, 9 refs., With French and German summaries.  
Small, R.J.  
Glacial deposits, Moraines, Glacier surfaces, Glacier flow, Switzerland—Haut Glacier d'Arolla.
- 40-2687**  
Transfer of basal sliding variations to the surface of a linearly viscous glacier.  
Baize, M.J., et al, *Journal of glaciology*, 1985, 31(109), p.308-318, 15 refs., With French and German summaries.  
Raymond, C.F.  
Glacier flow, Basal sliding, Viscous flow, Glacier surfaces, Rheology, Velocity, Strains, Mathematical models.
- 40-2688**  
Seasonal surface-velocity variations on a sub-polar glacier in West Greenland.  
Andreasen, J.O., *Journal of glaciology*, 1985, 31(109), p.319-323, 27 refs., With French and German summaries.  
Glacier flow, Glacier surfaces, Basal sliding, Meltwater, Glacier ablation, Glacier alimentation, Velocity, Greenland.
- 40-2689**  
Ice avalanches: some empirical information about their formation and reach.  
Alcan, J., *Journal of glaciology*, 1985, 31(109), p.324-333, 41 refs., With French and German summaries.  
Ice mechanics, Avalanche formation, Ice friction, Ice breaking, Slope orientation, Glacier beds, Avalanche forecasting, Switzerland—Alps.
- 40-2690**  
Mass-balance and ice-flow-law parameters for East Antarctica.  
Hamley, T.C., et al, *Journal of glaciology*, 1985, 31(109), p.334-339, Refs. p.338-339., With French and German summaries.  
Smith, I.N., Young, N.W.  
Mass balance, Mass flow, Ice sheets, Antarctica—East Antarctica.  
A comprehensive set of ice-velocity and thickness data from traverses within the IAGP study area (bounded by long. 90° E and 135° E, and north of lat. 80° S) is compared with steady-state mass-flux calculations based on Scott Polar Research Institute (SPRI) map compilations. The results of previous regional mass-budget estimates are reviewed and followed by a description of the new field measurements and the basis upon which a computer "grid-point" program is used to calculate balance fluxes. A comparison of measured and balance fluxes indicates that the ice sheet in this region of East Antarctica is unlikely to be significantly out of balance. The ratio of average column to surface velocity is discussed and calculated to be 0.89. (Auth. mod.)
- 40-2691**  
Studies on crescentic fractures and crescentic gouges with the help of close-range photogrammetry.  
Wintges, T., *Journal of glaciology*, 1985, 31(109), p.340-349, 18 refs., With French and German summaries.  
Alpine glaciation, Glacier flow, Photogrammetry, Fracturing, Ice scoring, Paleoclimatology, Mountains, Austria—Tyrol.
- 40-2692**  
Two-dimensional, time-dependent modeling of an arbitrarily shaped ice mass with the finite-element technique.  
Hodge, S.M., *Journal of glaciology*, 1985, 31(109), p.350-359, 22 refs., With French and German summaries.  
Glacier flow, Glacier mass balance, Glacier beds, Topographic features, Ice cover thickness, Computer applications, Ice models, United States—Washington—South Cascade Glacier.
- 40-2693**  
Ice-core drilling at 5700 m powered by a solar voltaic array.  
Koci, B.R., *Journal of glaciology*, 1985, 31(109), p.360-361, 1 ref., With French and German summaries.  
Ice coring drills, Ice cores, Equipment, Solar radiation, Peru.
- 40-2694**  
System for mounting end caps on ice specimens.  
Cole, D.M., et al, *Journal of glaciology*, 1985, 31(109), p.362-365, 3 refs., With French and German summaries.  
Gould, L.D., Burch, W.B.  
Ice cores, Ice sampling, Equipment, Freezing, Water temperature, Compressive properties.  
This short note describes the equipment and procedures developed to mount end caps on ice-core specimens. The system typically achieves end-plane parallelism within 0.5 micron/mm of specimen diameter (i.e. a total indicator run-out of 0.002 in for a 4.0 in diameter specimen). The essential elements of the system are a holder and an alignment fixture. The holder firmly grips the ice core about its circumference by the compression of two series of O-rings. The alignment fixture clamps the holder to align the ice core precisely with the end caps. To bond the ice to the end cap we form a layer of 0°C water on the end cap; the water freezes immediately upon contact with the ice and forms a strong intimate bond. To date, this system has been used to install phenolic end caps on 101.6 mm diameter cores and aluminum end caps on 76.2 mm diameter cores of saline ice. A somewhat better tolerance was obtained with the aluminum caps, due primarily to the geometric stability of that material under the prevailing conditions. These specimens have been successfully tested in uniaxial and triaxial compression, and with appropriate end caps the system should be suitable for preparing tension specimens as well.
- 40-2695**  
Jökulhláup near Søndre Strømfjord, West Greenland, and some effects on the ice-sheet margin.  
Sugden, D.E., et al, *Journal of glaciology*, 1985, 31(109), p.366-368, 1 ref., With French and German summaries.  
Clapperton, C.M., Knight, P.G.  
Subglacial drainage, Glacial lakes, Calving, Ice mechanics, Ice edge, Greenland.
- 40-2696**  
On the long-term behaviour of glacial ice under moving traffic load: a case study.  
Vombatkere, S.G., *Journal of glaciology*, 1985, 31(109), p.369-371, 2 refs., With French and German summaries.  
Ice mechanics, Loads (forces), Bridges, Bearing strength, Cold weather construction, Glacier flow, Trafficability, Seasonal variations, Meltwater, Ice physics.
- 40-2697**  
Isotope ratios of large ice masses.  
Jones, A.S., *Journal of glaciology*, 1985, 31(109), p.372-374, 8 refs., With French and German summaries.  
Ice models, Ice sheets, Oxygen isotopes, Ice composition, Polar regions.  
A model is proposed for determining the relative proportions of O-16 and O-18 in large ice sheets. Values calculated using this model are in agreement with published values for Antarctica and Greenland. It is intended to use the model for comparisons between the known ocean isotopic records and postulated ice-sheet masses during the last ice age. (Auth.)
- 40-2698**  
On re-assessment of the mass balance of the Lambert Glacier drainage basin, Antarctica.  
Allison, I., et al, *Journal of glaciology*, 1985, 31(109), p.378-382, With French and German summaries., 8 + 10 refs. For article commented on see F-32012 or 39-3722. Reply by N. McIntyre, ibid p.381-382.  
Young, N.W., Medhurst, T., McIntyre, N.  
Mass flow, Glacier surfaces, Glacier mass balance, Subsurface drainage.  
This letter concerns the interpretation of tonal variations in Landsat multispectral scanner imagery over the antarctic ice sheet—with comments on accumulation rates in Lambert Glacier's interior drainage basin—and a reply to the letter supporting the author's contention of a lower value for net mass input.
- 40-2699**  
Studies, utilization and preservation of the vegetation of highlands. [Izuchenie, ispol'zovanie i okhrana rastitel'nogo mira vysokogor'ii]. Vsesoiuznoe soveshchanie po flore i rastitel'nosti vysokogor'ii, 9th, Sosnovka, July 22-28, 1985, Dal'nevostochnyi nauchnyi tsentr, AN SSSR, 1985, 205p., Summary proceedings. In Russian. For selected summaries see 40-2700 through 40-2706.  
Kharkevich, S.S., ed.  
Plant ecology, Alpine landscapes, Ecosystems, Forest land, Deserts, Alpine tundra, Vegetation, Classification, Distribution, Geography.
- 40-2700**  
Vascular plants of the Kuril Islands highlands. [Sosudistye rasteniia vysokogor'ii Kuril'skikh ostrovov].  
Barkalov, V.IU., Izuchenie, ispol'zovanie i okhrana rastitel'nogo mira vysokogor'ii (Studies, utilization and preservation of the vegetation of highlands) edited by S.S. Kharkevich, Dal'nevostochnyi nauchnyi tsentr, AN SSSR, 1985, p.9-11, In Russian.  
Alpine landscapes, Forest land, Deserts, Alpine tundra, Environmental protection.
- 40-2701**  
Present state and problems in studying taxonomic composition and geographic distribution of vascular plants in highlands of the Soviet Far East. [Sostoianie i zadachi izucheniia taksonomicheskogo sostava i geograficheskogo raspriostaneniia sosudistyykh rastenii vysokogor'ii sovetskogo Dal'nego Vostoka].  
Kharkevich, S.S., Izuchenie, ispol'zovanie i okhrana rastitel'nogo mira vysokogor'ii (Studies, utilization and preservation of the vegetation of highlands) edited by S.S. Kharkevich, Dal'nevostochnyi nauchnyi tsentr, AN SSSR, 1985, p.50-53, In Russian.  
Alpine tundra, Plant ecology, Plant physiology, Distribution, Geography.
- 40-2702**  
Far Eastern forests growing below bald-peaks. [Podgol'tsove lesa sovetskogo Dal'nego Vostoka].  
Vasil'ev, I.G., et al, Izuchenie, ispol'zovanie i okhrana rastitel'nogo mira vysokogor'ii (Studies, utilization and preservation of the vegetation of highlands) edited by S.S. Kharkevich, Dal'nevostochnyi nauchnyi tsentr, AN SSSR, 1985, p.64-65, In Russian.  
Rozenberg, V.A.  
Alpine landscapes, Deserts, Forest land, Cryogenic soils, Plant ecology, Soil erosion, Ecosystems, Environmental protection.
- 40-2703**  
Alpine tundra vegetation as presented on the new geobotanical map of the USSR. [Tundrovaya vysokogornaya rastitel'nost' na novoi geobotanicheskoi karte SSSR].  
Gribova, S.A., Izuchenie, ispol'zovanie i okhrana rastitel'nogo mira vysokogor'ii (Studies, utilization and preservation of the vegetation of highlands) edited by S.S. Kharkevich, Dal'nevostochnyi nauchnyi tsentr, AN SSSR, 1985, p.73-74, In Russian.  
Alpine tundra, Mapping, Maps, Geobotanical interpretation, Mosses, Lichens, Forest tundra, Plant ecology, Ecosystems.
- 40-2704**  
Types and classification of altitudinal belts of Siberian mountains. [Klassifikatsiia tipov poiasnosti gor Sibir].  
Ogureva, G.N., Izuchenie, ispol'zovanie i okhrana rastitel'nogo mira vysokogor'ii (Studies, utilization and preservation of the vegetation of highlands) edited by S.S. Kharkevich, Dal'nevostochnyi nauchnyi tsentr, AN SSSR, 1985, p.90-91, In Russian.  
Alpine landscapes, Vegetation, Classifications, Tundra, Taiga, Steppes, Cryogenic soils.
- 40-2705**  
High altitude forest-biocenoses of northern Caucasus. [Lesnye biotsenozy vysokogor'ii Severnogo Kavkaza].  
Ostapenko, B.F., et al, Izuchenie, ispol'zovanie i okhrana rastitel'nogo mira vysokogor'ii (Studies, utilization and preservation of the vegetation of highlands) edited by S.S. Kharkevich, Dal'nevostochnyi nauchnyi tsentr, AN SSSR, 1985, p.92-94, In Russian.  
Ivchenko, S.I.  
Alpine landscapes, Plant ecology, Forest soils, Plant physiology, Protective vegetation, Forest strips.
- 40-2706**  
Distribution of plant communities in the Byrranga mountain system (Arctic Taymyr Peninsula). [Raspredelenie rastitel'nykh soobshchestv v gornoi sisteme Byrranga (Arkticheskiĭ Taymyr)].  
Rapota, V.V., Izuchenie, ispol'zovanie i okhrana rastitel'nogo mira vysokogor'ii (Studies, utilization and preservation of the vegetation of highlands) edited by S.S. Kharkevich, Dal'nevostochnyi nauchnyi tsentr, AN SSSR, 1985, p.99-100, In Russian.  
Tundra, Continuous permafrost, Cryogenic soils, Active layer, Plant ecology, Arctic regions, Ecosystems.
- 40-2707**  
Studies of ice crystal habit development in a new wedge-shaped ice thermal diffusion chamber.  
Wang, A., et al, *Scientia sinica. Series B*, Sep. 1985, 28(9), p.979-987, 14 refs.  
Fukuta, N.  
Ice crystal growth, Thermal diffusion, Experimentation, Ice crystal structure, Ice crystal size.

- 40-2708**  
Past Antarctic Peninsula climate (1850-1980) deduced from an ice core isotope record.  
Aristarain, A.J., et al, *Climatic change*, Feb. 1986, 8(1), p.69-89, 34 refs.  
Jouzel, J., Pourchet, M.  
Ice cores, Isotope analysis, Deuterium, Surface temperature, Snow temperature, Climatic changes, Fall-out, Antarctica—Antarctic Peninsula, Antarctica—James Ross Island.  
A detailed climatic study has been carried out through the analysis of deuterium content in the snow layers of Daling Dome on James Ross Island. It is based on the high correlation found between mean deuterium contents at this site and temperature data from stations within this region going back as far as April 1903 for the Argentine Orcadas station. The strong correlation between isotopes and temperatures first reveals a 1956 isotope reference for the region considered. Secondly, the isotope-temperature gradient is estimated at 4.5 per mill./deg C for deuterium. After checking that the major temperature anomalies in the Antarctic Peninsula recorded since 1904 correspond to annual mean stable isotope peaks at Daling Dome, the amplitude of four prior anomalies are estimated in deg C. Finally, a cooling of about 2 C since 1850 is suggested for the region. (Auth)
- 40-2709**  
Heat balance for the Bering Sea ice edge.  
Hendricks, P.J., et al, *Journal of physical oceanography*, Dec. 1985, 15(12), p.1747-1758, 22 refs.  
Muench, R.D., Stegen, G.R.  
Sea ice, Ice edge, Heat flux, Water temperature, Heat balance, Bering Sea.
- 40-2710**  
Comparative study of geocryogenic (periglacial) conditions, features and processes in the Andes and Himalayas. The Andes.  
Corte, A.E., *Acta geocriogenica*, 1985, No.3, p.35-48, 26 refs.  
Geocryology, Permafrost distribution, Periglacial processes, Altiplanation, Rock glaciers, Frost action, Andes.
- 40-2711**  
Comparative study of geocryogenic (periglacial) conditions, features and processes in the Himalayas and Andes. The Himalayas.  
Cui, Z., *Acta geocriogenica*, 1985, No.3, p.49-59, 2 refs.  
Permafrost distribution, Geocryology, Periglacial processes, Snow line, Climatic factors, Frost heave, Frost action, Thermokarst development, Snow mechanics, Himalaya Mountains.
- 40-2712**  
Conclusions of geocryogenic conditions in the Andes and Himalayas.  
Corte, A.E., et al, *Acta geocriogenica*, 1985, No.3, p.62-63.  
Cui, Z.  
Geocryology, Permafrost distribution, Periglacial processes, Altiplanation, Freeze thaw cycles, Andes, Himalaya Mountains.
- 40-2713**  
Loess in soils of stratigraphic importance in the periglacial zone of Mount Kenya, East Africa.  
Mahaney, W.C., *Acta geocriogenica*, 1985, No.3, p.64-85, Refs. p.72-74.  
Periglacial processes, Glacial deposits, Soil composition, Loess, Soil dating, Mountains, Stratigraphy, Pleistocene, Radioactive age determination, Kenya—Kenya Mountain.
- 40-2714**  
Fossil ice wedges in Southern Patagonia and their paleoclimatic significance.  
Galloway, R.W., *Acta geocriogenica*, 1985, No.3, p.106-113, 18 refs.  
Ice wedges, Fossil ice, Paleoclimatology, Periglacial processes, Glacial deposits, Temperature effects, Argentina—Patagonia.
- 40-2715**  
Models of rock glacier formation and movement.  
Whalley, W.B., *Acta geocriogenica*, 1985, No.3, p.122-123.  
Rock glaciers, Ice models, Glacier flow, Ice formation, Ice mechanics.
- 40-2716**  
Loess of Tajik SSR.  
Goudie, A.S., et al, International Karakoram Project. Edited by K.J. Miller. Vol.1, Cambridge University Press, 1984, p.399-412, 27 refs.  
Rendell, H.M., Bull, P.A.  
Loess, Soil composition, Soil dating, Pleistocene, Mountain soils, Age determination, Grain size, Mountain glaciers, Chemical analysis, Mineralogy, Scanning electron microscopy, USSR—Tajikistan.
- 40-2717**  
International Karakoram Project: an appraisal.  
Miller, K.J., International Karakoram Project. Edited by K.J. Miller. Vol.2, Cambridge University Press, 1984, p.5-16.  
Research projects, International cooperation, Mountain glaciers, Glaciology, Geology, Geomorphology, Engineering, Surveys, Pakistan—Karakoram.
- 40-2718**  
Preliminary study of ancient trees in the Hunza Valley and their dendroclimatic potential.  
Bilham, R., et al, International Karakoram Project. Edited by K.J. Miller. Vol.2, Cambridge University Press, 1984, p.599-606.  
Pant, G.B., Jacoby, G.C.  
Trees (plants), Forestry, Age determination, Climatic changes, Mountain glaciers, Glacier flow, Soil erosion, Plant ecology, Pakistan—Karakoram.
- 40-2719**  
Rock temperature observations and chemical weathering in the Hunza region, Karakoram: preliminary data.  
Whalley, W.B., et al, International Karakoram Project. Edited by K.J. Miller. Vol.2, Cambridge University Press, 1984, p.616-633, 14 refs.  
McGreevy, J.P., Ferguson, R.I.  
Rocks, Weathering, Cracking (fracturing), Chemical analysis, Climatic factors, Temperature variations, Mountains, Precipitation (meteorology), Pakistan—Karakoram.
- 40-2720**  
Non-solar influences on temperatures of south coastal Alaskan streams.  
Bishop, D.M., *Alaska. University. Institute of Water Resources. Report*, Nov. 1983, IWR-105, Managing water resources for Alaska's development; proceedings, edited by J.W. Aldrich, p.13(1)-13(19), 10 refs.  
Heat transfer, Temperature variations, Meteorology, Glacial rivers, Ice cover effect, Streams, Wind chill, Snowfall, Freezeup, Soil temperature.
- 40-2721**  
Development and use of a resource atlas for the Chugach National Forest.  
Blanchet, D., *Alaska. University. Institute of Water Resources. Report*, Nov. 1983, IWR-105, Managing water resources for Alaska's development; proceedings, edited by J.W. Aldrich, p.15(1)-15(18), 20 refs.  
Forestry, Maps, Climatic factors, Hydrology, Geology, Environmental protection, United States—Alaska.
- 40-2722**  
Comparison of climate model sensitivity with data from the last glacial maximum.  
Manabe, S., et al, *Journal of the atmospheric sciences*, Dec. 1, 1985, 42(23), p.2643-2651, 21 refs.  
Broccoli, A.J.  
Climatic changes, Glacial meteorology, Sea ice distribution, Carbon dioxide, Paleoclimatology.  
An attempt has been made to use paleoclimatic data from the last glacial maximum to evaluate the sensitivity of two versions of an atmosphere/mixed-layer ocean model. Each of these models has been used to study the CO<sub>2</sub>-induced changes in climate. Given the distributions of continental ice sheets, surface albedo, and the reduced carbon dioxide concentration of the ice age, the climate of the last glacial maximum (LGM) is simulated by each model and compared with the corresponding simulation of the present climate. Both models generate differences in sea surface temperature and surface air temperature which compare favorably with estimates of the actual differences in temperature between the LGM and the present. However, it is difficult to determine which version of the model is more realistic in simulating the ice age climate. (Auth. mod.)
- 40-2723**  
Engineering problems in drafting master plans for industrial enterprises. (Inzhenernye voprosy proektirovaniia general'nykh planov promyshlennyykh predpriatii).  
Reznikov, A.L., et al, Leningrad, Stroizdat, 1985, 237p., In Russian with abridged English table of contents enclosed. 16 refs.  
Neverov, V.A.  
Urban planning, Environmental protection, Paludification, Industrial buildings, Residential buildings, Permafrost distribution, Permafrost hydrology, Baykal Amur railroad, Design, Drainage, Permafrost beneath structures, Soil erosion, Gullies, Slope stabilization, Permafrost thermal properties.
- 40-2724**  
Studying the structures of bridge piers. (Issledovanie konstruktivnykh opor mostov).  
Baliuchik, E.A., ed, Moscow, Transport, 1985, 80p., In Russian. For selected paper see 40-2725. 3 refs.  
Bridges, Piers, Foundations, Prefabrication, Frost action.
- 40-2725**  
Ways of improving bridge pier structures for different climatic conditions. (O putiakh sovshchenstvovaniia konstruktivnykh opor mostov dlia razlichnykh klimaticheskikh uslovii stroitel'stva).  
Baliuchik, E.A., Issledovanie konstruktivnykh opor mostov (Studying the structures of bridge piers) edited by E.A. Baliuchik, Moscow, Transport, 1985, p.5-12, In Russian. 3 refs.  
Bridges, Piers, Foundations, Baykal Amur railroad, Prefabrication, Concrete structures, Frost action, Winter concreting.
- 40-2726**  
Thermophysical studies in transportation engineering. (Teplofizicheskie issledovaniia v transportnom stroitel'stve).  
Tsukanov, N.A., ed, Moscow, Transport, 1985, 89p., In Russian. For selected papers see 40-2727 through 40-2739. Refs. passim.  
Concrete structures, Bridges, Permafrost beneath structures, Reinforced concretes, Piers, Foundations, Permafrost bases, Moorings, Walls, Frost action, Ice loads.
- 40-2727**  
Construction of hollow, thick-walled, no-cap bridge supports under severe climatic conditions. (Stroitel'stvo bezostverkovykh opor mostov iz polykh tolstostennnykh obolochek v surovyykh usloviakh).  
Tiulenev, E.A., et al, Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.8-13, In Russian. 5 refs.  
Concrete structures, Bridges, Reinforced concretes, Piers, Permafrost beneath structures, Drilling, Construction equipment.
- 40-2728**  
Calculating ground temperature regime at the base of columnar supports of small- and medium-size bridges, equipped with cooling devices. (Raschety temperaturnoy rezhima gruntov v osnovanii stolbchatykh opor mostov osnashchennykh okhlazhdsiushchimi ustanovkami).  
Sloev, L.N., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.14-21, In Russian. 3 refs.  
Bridges, Foundations, Artificial freezing, Piers, Permafrost beneath structures, Permafrost control.
- 40-2729**  
Temperature regime of ground beneath a reinforced concrete seawall. (Issledovanie temperaturnoy rezhima gruntov v osnovanii bol'verka iz zhelezobeton-nogo shpunta).  
Gerasimova, E.I., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.21-28, In Russian.  
Moorings, Reinforced concretes, Walls, Permafrost beneath structures, Soil temperature, Water pressure, Ice loads, Heat transfer.
- 40-2730**  
Thermophysical studies of auxiliary processes in welding of bridge structures. (Teplofizicheskie issledovaniia vspomogatel'nykh protsessov pri svarke mostovykh konstruktivnykh).  
Passek, V.V., et al, Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.28-29, In Russian.  
Dushnitskii, V.M.  
Steel structures, Bridges, Welding, Joints (junctions), Deformations, Frost action.
- 40-2731**  
Influence of the dam construction season on thermal regime of bases. (Vliianie sezona proizvodstva rabot po vozvedeniiu nasypa na teplovoi rezhim osnovaniia).  
Sokolov, V.S., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.30-34, In Russian.  
Hydraulic structures, Earth dams, Embankments, Permafrost bases, Ground thawing, Design, Permafrost depth, Active layer, Permafrost structure.

40-2732

**Thermal stresses in bridge piers built in river channels.** (Termopriazhennoe sostoianie uslovykh opor mostov). Sokolov, V.V., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.34-37, In Russian. **Bridges, Piers, Concrete structures, Ice pressure, Frost action, Erosion.**

40-2733

**Calculating the applicability of different reinforcing steels in bridge construction.** (Metod rascheta dopustimosti primeneniia v mostakh razlichnykh marok armaturnoi stali). Denisov, I.I., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.37-43, In Russian. 6 refs. **Steel structures, Bridges, Steels, Frost resistance, Frost action, Reinforced concretes.**

40-2734

**Studying moisture regime of columnar bridge supports in the water-level fluctuation zone.** (Issledovanie vlazhnostnogo rezhima stolbchatykh opor mostov v zone peremennogo urovnia vody). Tsimerinov, A.I., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.43-48, In Russian. 6 refs. **Bridges, Piers, Permafrost bases, Water level, Moisture transfer.**

40-2735

**State of thermal stresses of composite bridge piers.** (Termopriazhennoe sostoianie sborno-monolitnykh opor mostov). Drobyshevskii, B.A., et al., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.52-55, In Russian. Klimova, V.P. **Concrete structures, Prefabrication, Bridges, Piers, Foundations, Thermal stresses, Permafrost beneath structures, Water temperature, Air temperature.**

40-2736

**Calculating frost-heave resistant roadbed structures.** (Raschet protivopuchinykh konstruktii zemliannogo polotna). Dydyshko, P.I., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.55-62, In Russian. 5 refs. **Railroads, Embankments, Roadbeds, Frost action, Frost penetration, Frost heave, Design.**

40-2737

**Calculating thermal insulation for limiting frost penetration depth.** (Raschet teploizolatsii dlia ograniicheniia glubiny promerzaniia grunta). Tsukanov, N.A., et al., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.67-73, In Russian. Granovskii, M.I.U. **Roadbeds, Hydraulic structures, Moorings, Concrete structures, Reinforced concretes, Prefabrication, Thermal insulation.**

40-2738

**Design and field observations of no-cap, hollow support bridge piers in their thermal effect zone.** (Natumye nabludeniia v zone teplovogo vlianiia bezostoverkovykh opor mostov s polymi stoffkami i osobennosti ikh proektirovaniia). Petrov, V.I., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.75-80, In Russian. 2 refs. **Bridges, Piers, Permafrost beneath structures, Thermal effects.**

40-2739

**Temperature regime of concrete samples during the tests of their frost resistance according to the basic and the accelerated methods developed by the GOST 10060-76.** (Temperaturnyi rezhim betonnykh obraztsov v protsessе opredeleniia morozostoičnosti po GOST 10060-76 osnovnyim i uskorennyim metodam). Ibragimov, R.S., et al., Teplofizicheskie issledovaniia v transportnom stroitel'stve (Thermophysical studies in transportation engineering) edited by N.A. Tsukanov, Moscow, Transport, 1984, p.80-84, In Russian. 2 refs. Nikanorov, V.P. **Standards, Building codes, Concretes, Sampling, Low temperature tests.**

40-2740

**Marine radio communication.** (Morskaiia radio-sviat'). Ulanova, E.A., ed, Leningrad, Transport, 1985, 145p., In Russian. For selected articles see 40-2741 and 40-2742. Refs. passim. **Radio communication, Ice navigation, Ice reporting.**

40-2741

**Reception of satellite ice information on board ships.** (Priem sputnikovoi ledovoi informatsii na sudakh). Kapustin, A.N., et al., Morskaiia radio-sviat' (Marine radio communication) edited by E.A. Ulanova, Leningrad, Transport, 1985, p.57-60, In Russian. 2 refs. Likhachev, A.V. **Ice navigation, Side looking radar, Ice surveys, Ice reporting, Icebreakers.**

40-2742

**Present state and prospects for the development of means for spaceborne ice surveying.** (Sovremennoe sostoianie i perspektivy razvitiia kosmicheskikh sredstv ledovoi razvedki). Ionikas, P.S., Morskaiia radio-sviat' (Marine radio communication) edited by E.A. Ulanova, Leningrad, Transport, 1985, p.84-88, In Russian. 10 refs. **Sea ice distribution, Spaceborne photography, Ice surveys, Side looking radar, Remote sensing, Snow cover effect, Polynyas.**

40-2743

**Nucleation of ice crystals in supercooled clouds caused by passage of an airplane.** Vonnegut, B., *Journal of climate and applied meteorology*, Jan. 1986, 25(1), p.98, 7 refs. **Ice crystal nuclei, Condensation trails, Ice crystal growth, Airplanes, Supercooled clouds.**

40-2744

**Antarctic journal of the United States, Vol.20, No.4, Dec. 1985.** U.S. National Science Foundation, Washington, D.C., 23p. **Sea ice, Ice sheets, Optical properties, Marine biology.** This issue contains articles on: seal diving physiology, a role for sea ice organisms; snow and sky optics; antarctic ice drainage system; the Byrd papers being acquired by Ohio State University; geology of Chilean canals; update of antarctic sailing directions, and the availability of an antarctic sea ice atlas and translations of Russian antarctic research data. NSF funding awards for July 1-Sep. 30, 1985 are listed and weather summaries at McMurdo, Palmer, and Amundsen-Scott Stations for Aug., Sep., and Oct. 1985 are given. For selected individual papers see 40-2745 and 40-2746 or F-33421, F-33422, and A-33423.

40-2745

**Optics of the snow and sky.** Foster, J., *Antarctic journal of the United States*, Dec. 1985, 20(4), p.3-5, 7 refs. **Snow optics, Ice optics, Cloud physics.**

Various antarctic optical phenomena resulting from a combination of low temperature, unusual sun angles, clarity of the atmosphere, and the abundance of snow and ice are described. These phenomena include Firnspiegel, blue snow and green ice, halos, coronas, iridescent clouds, glories, and fogbows.

40-2746

**Surface balance in ice drainage systems in Antarctica.** Giovinetto, M.B., et al., *Antarctic journal of the United States*, Dec. 1985, 20(4), p.6-13, 59 refs. Bentley, C.R. **Ice sheets, Mass balance, Surface drainage, Glacier ice, Ice shelves.**

Antarctica has six major drainage systems. The three that issue through the Amery, Ross, and Ronne-Filchner Ice Shelves drain most of the deep interior. The other three drain the periphery of the continent and are coastal in character. These systems are described and shown on charts. Procedures for constructing the systems are set forth, comparisons with earlier drainage charts are made, data sets are evaluated, and balance isopleths are drawn on the charts. Tables depict the areas of the drainage systems, data source updates, and surface mass balance rates.

40-2747

**All-Union conference "Geochemistry of areas affected by industrial activities", 1st, Irkutsk, Oct. 29-31, 1985. Summaries.** (Tezisy dokladov). Vsesoiuznoe soveshchanie "Geokhimiia tekhnogeneza", 1st, Irkutsk, Oct. 29-31, 1985, Irkutsk, 1985, 3 vols., In Russian. For selected articles see 40-2748 through 40-2750.

**Bacteria, Hot springs, Wooden structures, Icing, Ice sampling, Biomass, Minerals.**

40-2748

**Bacterial transformation of sulfur forms in the system "thermal spring-wooden hut".** (Bakterial'noe preobrazovanie form nakhozhdeniia sery v sisteme "termal'nyi istochnik-dereviannaia postroika"). Chashchina, N.M., et al., Vsesoiuznoe soveshchanie "Geokhimiia tekhnogeneza", Tezisy dokladov (All-Union conference "Geochemistry of areas affected by industrial activities", 1st, Irkutsk, Oct. 19-31, 1985, Summaries), Vol.1, Irkutsk, 1985, p.164-168, In Russian.

**Pogrebnik, I.U.F., Kondratenko, L.A. Bacteria, Hot springs, Wooden structures, Icing, Ice sampling, Sulfur, Oxidation, Ice composition.**

40-2749

**First results of studying sphagnum mosses and high-bog peat for atmospheric pollution by heavy metals.** (Pervye itogi issledovaniia sfagnovykh mkhov i torfa verkhovykh bolot dlia indikatsii zagriazneniia atmosfery tiazhelyimi metallami). Badenkova, S.V., et al., Vsesoiuznoe soveshchanie "Geokhimiia tekhnogeneza", Tezisy dokladov (All-Union conference "Geochemistry of areas affected by industrial activities", 1st, Irkutsk, Oct. 19-31, 1985, Summaries), Vol.1, Irkutsk, 1985, p.15-18, In Russian. 8 refs.

**Dobrodeev, O.P. Air pollution, Swamps, Metals, Ice cores, Ice composition.**

40-2750

**Dynamics of chemical elements in snow cover.** (Dinamika khimicheskikh elementov v snegovom pokrove). Fedoseeva, V.I., et al., Vsesoiuznoe soveshchanie "Geokhimiia tekhnogeneza", Tezisy dokladov (All-Union conference "Geochemistry of areas affected by industrial activities", 1st, Irkutsk, Oct. 19-31, 1985, Summaries), Vol.3, Irkutsk, 1985, p.30-31, In Russian. Makarov, V.N., Fedoseev, N.F. **Pollution, Snow surveys, Sampling, Ice composition, Chemical composition, Soil composition.**

40-2751

**Experiments with unsalted roads: final report.** Öberg, G., et al., Sweden. *Statens väg- och trafikinstitut. Rapport*, 1985, No.282A, 86p. + appendix, 16 refs. **Road icing, Salting, Damage, Corrosion, Accidents, Chemical ice prevention, Meteorological factors, Sweden.**

40-2752

**M.V. Arctic seminar 1985: abstracts of presentations.** Peirce, T.H., et al., Operational Dynamics, No. TP 7235E, Ste Marthe, Quebec, Peirce Operational Dynamics, Inc., Nov. 1985, 25p.

**Gillies, T.K. Ships, Ice navigation, Offshore structures, Ice loads.**

40-2753

**Oil in ice computer model.** Wotherspoon, P., et al., *Environmental Studies Revolving Funds. Report*, Dec. 1985, No.19, 129p., With French summary. 4 refs. Swiss, J., Kowalchuk, R., Armstrong, J. **Oil spills, Ice cover effect, Sea ice, Ice conditions, Mathematical models, Computer applications, Distribution.**

40-2754

**Subsea permafrost: probing, thermal regime and data analyses 1975-1981.** Osterkamp, T.E., et al., Fairbanks, University of Alaska, Geophysical Institute, Apr. 1985, 108p., Refs. p.42-47. Harrison, W.D. **Subsea permafrost, Thermal regime, Permafrost distribution, Permafrost physics, Petroleum industry, Offshore drilling, Exploration, Hydrocarbons, Ground thawing, United States-Alaska.**

40-2755

**Field tests of the Oil Mop Arctic Skimmer.** Laperrière, F., *Spill technology newsletter*, May-Dec. 1984, 9(3-6), p.52-53. **Oil spills, Ice conditions, Countermeasures, Tests.**

- 40-2756**  
Electrostatic, thermal and vapor density fields surrounding stationary columnar ice crystals.  
Wang, P.K., et al, *Journal of the atmospheric sciences*, Nov. 15, 1985, 42(22), p.2371-2379, 11 refs.  
Chuang, C.H., Miller, N.L.  
Ice crystal structure, Electric fields, Temperature effects, Water vapor, Density (mass/volume), Mathematical models.
- 40-2757**  
Weighted-density-functional theory of inhomogeneous liquids and the freezing transition.  
Curtin, W.A., et al, *Physical review A: General physics*, Nov. 1985, 32(5), p.2909-2919, 25 refs.  
Ashcroft, N.W.  
Liquids, Freezing, Density (mass/volume), Analysis (mathematics), Theories, Heterogeneity.
- 40-2758**  
Theory for the anomalous light scattering in growing ice crystals.  
Keizer, J., et al, *Physical review A: General physics*, Nov. 1985, 32(5), p.2944-2962, 41 refs.  
Mazur, P., Morita, T.  
Ice crystal growth, Light scattering, Hydrodynamics, Analysis (mathematics), Theories.
- 40-2759**  
China's antarctic scientific expedition. Beijing, China Ocean Press, 1985, 119p., In Chinese and English.  
Expeditions, Photography, Antarctica.  
Following a review of the antarctic environment and a general statement of China's experience and research goals in Antarctica, brief accounts are given of the ocean journey to King George Island, construction of the Great Wall Station, some research projects conducted on the island and in surrounding oceans, meetings with groups from other nations, and the return to Beijing. All texts are quite short, for the main thrust of the book are the photographs of the antarctic environment, its inhabitants, and the Chinese expeditioners who were its visitors.
- 40-2760**  
Petroleum effects in the Arctic environment.  
Engelhardt, F.R., ed. London, Elsevier Applied Science Publishers, 1985, 281p., Refs. passim. For selected papers see 40-2761 through 40-2764.  
Oil spills, Environmental impact, Ice cover effect, Marine biology, Tundra, Pollution, Crude oil, Sea ice, Hydrocarbons, Forecasting.
- 40-2761**  
Arctic marine ecosystem.  
Dunbar, M.J., Petroleum effects in the Arctic environment. Edited by F.R. Engelhardt, London, Elsevier Applied Science Publishers, 1985, p.1-35, Refs. p.31-35.  
Marine biology, Ocean environments, Ecosystems, Ice cover effect, Oceanography, Climatic factors.
- 40-2762**  
Physical and chemical fate of spilled oil.  
Mackay, D., Petroleum effects in the Arctic environment. Edited by F.R. Engelhardt, London, Elsevier Applied Science Publishers, 1985, p.37-61, Refs. p.59-61.  
Oil spills, Ice cover effect, Physical properties, Chemical properties, Sea ice, Crude oil, Forecasting, Environmental impact, Ocean environments, Models.
- 40-2763**  
Effects of hydrocarbons on microorganisms and petroleum biodegradation in Arctic ecosystems.  
Atlas, R.M., Petroleum effects in the Arctic environment. Edited by F.R. Engelhardt, London, Elsevier Applied Science Publishers, 1985, p.63-99, Refs. p.91-99.  
Tundra, Hydrocarbons, Microbiology, Crude oil, Marine biology, Ecosystems, Degradation, Ocean environments, Lakes.
- 40-2764**  
Effects of oil on Arctic invertebrates.  
Wells, P.G., et al, Petroleum effects in the Arctic environment. Edited by F.R. Engelhardt, London, Elsevier Applied Science Publishers, 1985, p.101-156, Refs. p.144-156.  
Percy, J.A.  
Oil spills, Marine biology, Plankton, Water pollution, Ice cover effect, Ecosystems.
- 40-2765**  
Deicing/anti-icing fluid: runways and taxiways.  
Society of Automotive Engineers, *Aerospace material specification*, 1986, SAE AMS 1426A, 8p., Supersedes AMS 1426.  
Road icing, Chemical ice prevention, Runways, Corrosion, Damage, Ice removal, Airports, Liquids.
- 40-2766**  
Some empirical evidence for the influence of snow cover on temperature and precipitation.  
Namias, J., *Monthly weather review*, Sep. 1985, 113(9), p.1542-1553, 8 refs.  
Snow cover effect, Air temperature, Precipitation (meteorology), Surface temperature, Synoptic meteorology.
- 40-2767**  
Model of acoustic backscatter from Arctic sea ice.  
Greene, R.R., et al, *Acoustical Society of America. Journal*, Nov. 1985, 78(5), p.1699-1701, 14 refs.  
Stokes, A.P.  
Ice acoustics, Backscattering, Sea ice, Models, Analysis (mathematics), Slope orientation, Surface roughness, Spectra.
- 40-2768**  
Examination of heavy-duty, ultra-thick coating systems for offshore steel structures.  
Kitayama, M., et al, *Iron and Steel Institute of Japan. Transactions*, 1985, 25(11), p.1163-1170, 2 refs.  
Protective coatings, Offshore structures, Steel structures, Cold weather tests, Corrosion, Resins, Counter-measures.
- 40-2769**  
Characteristic frequency of force variations in continuous crushing of sheet ice against rigid cylindrical structures.  
Sodhi, D.S., et al, *Cold regions science and technology*, Feb. 1986, 12(1), MP 2018. p.1-12, 20 refs.  
Morris, C.E.  
Ice loads, Offshore structures, Ice cover strength, Ice solid interface, Ice pressure, Piles, Ice breaking, Velocity, Ice cover thickness, Tests, Damage.  
The ice forces generated during continuous crushing of an ice sheet against a cylindrical vertical structure vary with time, according to the resistance offered by ice as it fails and clears from the path of the structure. Small-scale experiments were performed to measure the ice forces by pushing rigid cylindrical structures of different diameters at different velocities through an ice sheet. The dominant frequency of ice force variations, defined as the characteristic frequency, was determined from the frequency spectra of the force records. The characteristic frequency plot with respect to the velocity-to-thickness ratio reveals a linear relationship, which implies that the average length of the damage zone is proportional to the ice thickness. On the basis of the data presented here, the average length of the damage zone is about one-third of the ice thickness.
- 40-2770**  
Confined compression tests: outlining the failure envelope of columnar sea ice.  
Timco, G.W., et al, *Cold regions science and technology*, Feb. 1986, 12(1), p.13-28, 33 refs.  
Frederking, R.M.W.  
Ice breaking, Offshore structures, Ice crystal structure, Sea ice, Compressive properties, Ice loads, Loads (forces), Tests, Ice cover strength, Strains, Ice salinity, Ice temperature, Ice density, Analysis (mathematics).
- 40-2771**  
Refreezing of cracks formed by bending of floating ice sheets.  
Christensen, F.T., *Cold regions science and technology*, Feb. 1986, 12(1), p.29-37, 5 refs.  
Ice cracks, Freezing, Floating ice, Flexural strength, Compressive properties, Flooding.
- 40-2772**  
Mathematical models of the temperature and water-heat transfer in the percolation zone of a glacier.  
Cai, B., et al, *Cold regions science and technology*, Feb. 1986, 12(1), p.39-49, 8 refs.  
Xie, Z., Huang, M.  
Glacier heat balance, Heat transfer, Meltwater, Freezing, Snow cover, Mathematical models, Thermodynamics, Latent heat.
- 40-2773**  
Wavelength-dependent extinction by falling snow.  
Koh, G., *Cold regions science and technology*, Feb. 1986, 12(1), MP 2019, p.51-55, 9 refs.  
Snowfall, Light transmission, Infrared radiation, Light scattering, Visibility, Wave propagation, Particles.  
Wavelength-dependent extinction in the visible and infrared regions of the electromagnetic spectrum has been observed during studies of transmission through falling snow. The wavelength dependence was particularly noticeable during periods of light snowfall. Particles comparable in size to the wavelengths were also present during these periods. These particles were assumed to be water droplets, and their extinction cross-sections were determined from Mie scattering calculations. The calculations suggest that these particles were responsible for the wavelength-dependent extinction observed during snowfall.
- 40-2774**  
Flow of nonfreezing water interlayers and frost heaving.  
Deriagin, B.V., et al, *Cold regions science and technology*, Feb. 1986, 12(1), p.57-66, 45 refs.  
Churaev, N.V.  
Frost heave, Thermodynamics, Mass transfer, Water flow, Unfrozen water content, Soil water migration, Ground ice, Boundary layer, Temperature effects, Analysis (mathematics).
- 40-2775**  
Electromagnetic measurements of multi-year sea ice using impulse radar.  
Kovacs, A., et al, *Cold regions science and technology*, Feb. 1986, 12(1), MP 2020, p.67-93, 11 refs.  
Morey, R.M.  
Sea ice, Ice bottom surface, Electromagnetic properties, Ice structure, Brines, Air entrainment, Radio echo sounding, Dielectric properties, Ice physics, Radar echoes.  
Sounding of multi-year sea ice, using impulse radar operating in the 80- to 500-MHz frequency band, has revealed that the bottom of this ice cannot always be detected. This paper discusses a field program aimed at finding out why this is so, and at determining the electromagnetic (EM) properties of multi-year sea ice. It was found that the bottom of the ice could not be detected when the ice structure had a high brine content. Because of brine's high conductivity, brine volume dominates the loss mechanism in first-year sea ice, and the same was found true for multi-year ice. A two-phase dielectric mixing formula, used by the authors to describe the EM properties of first-year sea ice, was modified to include the effects of the gas pockets found in the multi-year ice. This three-phase mixture model was found to estimate the EM properties of the multiyear ice studied over the frequency band of interest.
- 40-2776**  
Modeling of evaporation of water into a sub-zero air stream.  
Puskas, J., et al, *Cold regions science and technology*, Feb. 1986, 12(1), p.95-97, 3 refs.  
McBean, E.A.  
Evaporation, Water temperature, Cold weather performance, Air flow, Models, Mass transfer, Air temperature, Heat balance, Velocity.
- 40-2777**  
Estimated basal ice temperatures at Crête, Greenland, throughout a glacial cycle.  
Paterson, W.S.B., et al, *Cold regions science and technology*, Feb. 1986, 12(1), p.99-102, 14 refs.  
Waddington, E.D.  
Ice temperature, Glaciation, Climatic changes, Ice cores, Heat transfer, Paleoclimatology, Boreholes, Heat flux, Greenland—Crête.
- 40-2778**  
Experimental study of ice flow around a bump: comparison with theory.  
Hooke, R.L., et al, *Geografiska annaler*, 1985, 67A(3-4), p.187-197, 27 refs.  
Iverson, N.R.  
Ice creep, Rheology, Ice deformation, Shear stress, Ice temperature, Experimentation, Flow measurements, Thermistors, Theories, Velocity.
- 40-2779**  
Pingos in northernmost Sweden.  
Lagerbäck, R., et al, *Geografiska annaler*, 1985, 67A(3-4), p.239-245, 18 refs.  
Rodhe, L.  
Pingos, Permafrost, Frost mounds, Ground ice, Hummocks, Glacial deposits, Sediments, Climatic factors, Thermokarst, Sweden.
- 40-2780**  
Geomorphological evidence of avalanche activity in Scotland.  
Ward, K.G.W., *Geografiska annaler*, 1985, 67A(3-4), p.247-256, 26 refs.  
Avalanche formation, Geomorphology, Landforms, Lichens, Slope orientation, Paleoclimatology, Talus, United Kingdom—Scotland.
- 40-2781**  
Road transport vehicles facing icing restrictions: present state and suggestions. [Les transporteurs routiers face aux barrières de dégel. Constat et propositions].  
François, J.C., *Revue générale des routes et des aéro-dromes*, Jan. 1986, No.626, p.15-17, In French.  
Road icing, Ice removal, Snow removal, Winter maintenance, Road maintenance, Trafficability.
- 40-2782**  
Winter traffic on concessionary highways. [Circulation hivernale sur les autoroutes concédées].  
Carreau, M., *Revue générale des routes et des aéro-dromes*, Jan. 1986, No.626, p.17-18, In French.  
Road icing, Ice removal, Snow removal, Trafficability, Winter maintenance.

40-2783

Urban winter traffic: experience of a person in charge. (La circulation hivernale en site urbain: l'expérience d'un responsable). Guillion, J., *Revue générale des routes et des aéro-dromes*, Jan. 1986, No.626, p.18-20, In French. Road icing, Ice control, Ice removal, Snow removal, Winter maintenance, Road maintenance, Trafficability.

40-2784

Salt: a valued ally of winter road services. (Un allié précieux des services de viabilité hivernale: le sel). Lettermann, G., *Revue générale des routes et des aéro-dromes*, Jan. 1986, No.626, p.20-22, In French. Salting, Road icing, Ice removal, Snow removal, Road maintenance, Winter maintenance.

40-2785

Determination of the maximum ice-forming activity of metal oxides. Powders of metal oxides. Baklanov, A.M., et al, *Colloid journal of the USSR*, Mar.-Apr. 1985 (Pub. Sep. 85), 47(2), p.193-200, Translated from *Kolloidnyi zhurnal*. 53 refs. Bibliographies, Cloud physics, Aerosols, Nucleating agents, Metals, Ice crystal nuclei, Ice formation.

40-2786

Determination of the maximum ice-forming activity of metal oxides. Determination of the ice-forming characteristics of a "pure" Aluminum oxide. Gorbunov, B.Z., et al, *Colloid journal of the USSR*, Mar.-Apr. 1985 (Pub. Sep. 85), 47(2), p.217-223, Translated from *Kolloidnyi zhurnal*. 22 refs. Kutsenogii, K.P., Pashchenko, S.E., Safatov, A.S. Weather modification, Smoke generators, Aerosols, Metals.

40-2787

Dynamics of the icing-over of low-temperature pipelines in stagnant water. Gorislavets, V.M., et al, *Journal of engineering physics*, Apr. 1985 (Pub. Oct. 85), 48(4), p.450-456, Translated from *Inzhenerno-fizicheskii zhurnal*. 13 refs. Semenov, L.P. Gas pipelines, Icing, Ice forecasting, Artificial freezing.

40-2788

Geography of destructive natural phenomena in the light of accelerated scientific and technical progress. (Problemy geografii razrushitel'nykh prirodnykh iavlenii v svete zadachi uskorennia nauchno-tekhnicheskogo progressa). Miagkov, S.M., Moscow, Universitet. Vestnik. Seriya 5 Geografiia, Jan.-Feb. 1986, No.1, p.9-15, In Russian. 12 refs. Floods, Ground thawing, Slope processes, Avalanches, Thermokarst, Permafrost hydrology, Mountain glaciers, Mudflows, Glacier surges, Permafrost thermal properties, Landslides.

40-2789

Geomorphology of river deltas of the Siberian Arctic coast. (Geomorfologiya rechnykh del't Arkticheskogo poberezh'ia Sibiri). Korotaev, V.N., Moscow, Universitet. Vestnik. Seriya 5 Geografiia, Jan.-Feb. 1986, No.1, p.42-49, In Russian. 7 refs. Estuaries, Coastal topographic features, Permafrost beneath rivers, Arctic Ocean.

40-2790

Space variation of snow cover structure and properties on mountain slopes. (Prostranstvennaia izmenchivost' stroeniia i svoistv snezhnogo pokrova na sklonakh gor). Volkovskii, K.F., et al, Moscow, Universitet. Vestnik. Seriya 5 Geografiia, Jan.-Feb. 1986, No.1, p.80-85, In Russian. 1 ref. Golubev, V.N., Volkovskii, V.K. Slope orientation, Snow depth, Snow accumulation, Snow cover distribution, Snow recrystallization, Mountains, Wind factors.

40-2791

Simplified physical model of heat transfer in thermal insulation of above-ground heat-conveying pipelines at low ambient temperatures. Shtopko, D.F., et al, *Heat transfer Soviet research*, Nov.-Dec. 1984, 16(6), p.93-98, 3 refs. Translated from *Izvestia Vuzov. Energetika*, No.8, 1984, p.101-103. Kochetkov, D.A., Chuvelva, Z.V. Models, Heat transfer, Construction materials, Thermal insulation, Heat pipes, Heat loss, Arctic regions, Pipelines.

40-2792

Solution of one inverse problem of coefficients for a nonlinear heat conduction equation. Grizdev, V.A., et al, *Heat transfer Soviet research*, Nov.-Dec. 1984, 16(6), p.99-113, 12 refs. Translated from *Teplotfizicheskie svoistva rastvorov*, AN SSSR, SO, Teplofiz. Inst., 1983, p.106-119. Kovalenko, I.U.A. Materials, Thermal properties, Physical properties, Thermal conductivity, Heat transfer, Analysis (mathematics).

40-2793

Enhancement of heat and mass transfer in high-rate crystallization on multiple nuclei by increasing the relative velocity of the phases. Bazhal, I.G., et al, *Heat transfer Soviet research*, Nov.-Dec. 1984, 16(6), p.128-132, 3 refs. Translated from *Promyshlennia teplotekhnika*, 7(2), 1985, p.63-65. Chernenko, V.F., Gulyi, I.S., Stepanets, L.F. Crystal growth, Mathematical models, Heat transfer, Mass transfer, Diffusion, Phase transformations.

40-2794

Snow cover distribution in mountains. (Vürkhu razpredelenieto na snezhnata pokrivka v planinski ralonij). Stanev, S., et al, *Khidrologiia i meteorologiia*, 1970, 19(2), p.33-40, In Bulgarian with Russian and English summaries. 3 refs. Simeonov, P. Snow cover distribution, Snow depth, Snow density, Alpine landscapes, Snow water equivalent, Snow surveys.

40-2795

Ice formation processes developing in cold fog chambers. (Vürkhu protsesite na ledoobrazuvane koito se rezvizat v edna studena kamera za mügla). Genadiiev, N., *Khidrologiia i meteorologiia*, 1979, 28(5), p.50-52, In Bulgarian. 11 refs. Supercooled fog, Nucleating agents, Cold chambers, Ice formation, Ice crystal nuclei, Aerosols, Ice crystal growth.

40-2796

Radio wave scattering by snow crystals. (Razseivane na radiovölните ot snezhni kristali). Petrov, R., *Khidrologiia i meteorologiia*, 1983, 32(3), p.26-33, In Bulgarian with English and Russian summaries. 8 refs. Radar echoes, Snow crystals, Radio waves, Remote sensing, Snow physics, Polarization (waves).

40-2797

Microparticles in snow from the South Greenland ice sheet. Steffensen, J.P., *Tellus*, Sep.-Nov. 1985, 37B(4-5), p.286-295, 18 refs. Ice sheets, Impurities, Dust, Particle size distribution, Oxygen isotopes, Snow cover, Greenland.

40-2798

Variations of the CO<sub>2</sub> concentration of occluded air and of anions and dust in polar ice cores. Oeschger, H., et al, American Geophysical Union. Geophysical monograph 32, The carbon cycle and atmospheric CO<sub>2</sub>: natural variations Archaean to present. Edited by E.T. Sundquist and W.S. Broecker, Washington, D.C., 1985, p.132-142, 33 refs. Stauffer, B., Finkel, R., Langway, C.C., Jr. DLC QE516.5.C37 1985. Ice cores, Gas inclusions, Carbon dioxide, Atmospheric composition.

After discussing the mechanism by which atmospheric gases are entrapped in ice, CO<sub>2</sub> concentrations in ice core samples up to 100,000 years old are reported from deep drilling projects in Greenland and the Antarctic. Results from ice deposited during the last 2,000 years provide an estimate of the preindustrial atmospheric CO<sub>2</sub> level, an important boundary condition for modelling the anthropogenic CO<sub>2</sub> increase. Using older samples from a deep ice core drilled at Dye 3, Greenland, it is shown that the CO<sub>2</sub> concentration was 180 to 200 ppmv at the end of the Wisconsin and increased during the transition to the Holocene to values in the 260 to 300 ppmv range. Detailed CO<sub>2</sub> measurements on sections of the Wisconsin part of the Dye 3 core, which were deposited during times of significant climatic variation, show that the changes in O-18 variations were accompanied by simultaneous correlated rapid CO<sub>2</sub> variations. Other parameters, including micro-particle concentration and concentrations of certain anions also showed significant variations which correlate with the measured changes in O-18 shifts. Measured and calculated data came from drill sites at Siple, Vostok, South Pole, and Byrd stations and Dome C. (Auth. mod.)

40-2799

Glacial to interglacial changes in atmospheric carbon dioxide: the critical role of ocean surface water in high latitudes. Toggweiler, J.R., et al, American Geophysical Union. Geophysical monograph 32, Washington, D.C., 1985, p.163-184, 55 refs. Sarmiento, J.L. DLC QE516.5.C37 1985. Sea water, Chemical composition, Carbon dioxide, Models.

A further examination is made of a 1984 proposal that glacial to interglacial changes in pCO<sub>2</sub> are related to changes in the nutrient content of high-latitude surface water. A four-box model of the ocean and atmosphere is developed which includes low- and high-latitude surface boxes, an atmosphere, and a deep ocean. High latitude regions are defined as those North Atlantic areas poleward of 60°N, and those areas of the South Atlantic, South Pacific, and Indian oceans poleward of 50°S. In simplest form the model equations show that the CO<sub>2</sub> content of high-latitude surface water is directly connected to the huge reservoir of CO<sub>2</sub> in deep water through the nutrient content of high-latitude surface water. Various relationships are discussed as chemical ingredients in sea water and atmosphere are transported each to the other, from low to high latitudes, with and without the presence of sea ice. (Auth. mod.)

40-2800

High-latitude ocean as a control of atmospheric CO<sub>2</sub>. Wenk, T., et al, American Geophysical Union. Geophysical monograph 32, Washington, D.C., 1985, p.185-194, 32 refs. Siegenthaler, U. DLC QE516.5.C37 1985. Ice cores, Carbon dioxide, Sea water, Chemical composition, Models.

It is suggested that the rapid natural atmospheric CO<sub>2</sub> variations during and at the end of the last glaciation which are indicated by ice core studies may have been caused by changes in the high-latitude oceans, particularly in the Antarctic. Concentrations of nutrients (N, P) in surface water are near zero in large ocean areas, but relatively high in high-latitude oceans. A circulation change could lead to more complete nutrient utilization and thus to a lower pCO<sub>2</sub> of surface waters in these regions. Possible changes are discussed, and their effects on atmospheric CO<sub>2</sub> concentrations, carbon isotope ratios and dissolved oxygen in the deep sea are estimated by means of a simple box model. Time-dependent calculations show that after a sudden change of circulation rate, the atmospheric CO<sub>2</sub> concentration would approach its new steady state value with a relaxation time of about 200 years. (Auth.)

40-2801

Effect of high pressure on the Raman spectra of ice VIII and evidence for ice X. Hirsch, K.R., et al, *Journal of chemical physics*, Mar. 1, 1986, 84(5), p.2771-2775, 22 refs. Holzapfel, W.B. High pressure ice, Hydrogen bonds, Spectra, Pressure, Heavy water, Phase transformations, Light scattering.

40-2802

Molecular theory for freezing: comparison of theories, and results for hard spheres. Haymet, A.D.J., *Journal of chemical physics*, Feb. 1, 1986, 84(3), p.1769-1777, 48 refs. Freezing, Phase transformations, Density (mass/volume), Molecular structure, Thermodynamics, Pressure, Computer applications, Temperature effects, Liquid solid interfaces, Analysis (mathematics).

40-2803

Freezing of aqueous solutions in a porous medium. Part 1. Freezing of air-entraining agent solutions. Chatterji, S., *Cement and concrete research*, Jan. 1985, 15(1), p.13-20, 10 refs. Freezing, Solutions, Porous materials, Air entrainment, Ice formation, Cements, Ice lenses, Pressure, Ice growth.

40-2804

Freezing of aqueous solutions in a porous medium. Part 2. Freezing of mixed solutions of air-entraining agents and water reducers. Chatterji, S., et al, *Cement and concrete research*, July 1985, 15(4), p.729-733, 1 ref. Jensen, A.D., Thaulow, N., Christensen, P. Freezing, Solutions, Porous materials, Air entrainment, Concrete structures, Ice formation, Saturation, Ice strength, Freeze thaw cycles, Frost resistance.

40-2805

Free boundary problems arising in the freezing of soils in a bounded region, Pts. 1-3. Mohamed, F.A., et al, *Journal of mathematical analysis and applications*, Oct./Nov. 1985, 111(1,2), p.1-13, 475-534, 36 refs. Guenther, R.B. Soil freezing, Phase transformations, Density (mass/volume), Boundary value problems, Freeze thaw cycles, Stefan problem, Temperature distribution, Analysis (mathematics).

40-2806

**Corrosion of concrete in the presence of thawing-out agents.** (Korroziia betona pri deistviim razmorazhivaiushchikh sredstv). Felikan, J., et al, *Razrabotka meropriatiil po zashchite metallov ot korrozii* (Development of methods for protecting metals from corrosion. Reports for the international scientific-technical conference on problems of the North, 3rd, 1980. Vol.5). Warsaw, Institut pretsizionnoi mekhaniki, 1980, p.270-273, In Russian. 4 refs.

Smrch, M., Vošta, J.  
**Reinforced concretes, Concrete freezing, Concrete admixtures, Antifreezes, Metals, Corrosion, Frost resistance.**

40-2807

**Hydration processes in cement concretes during freeze-thaw cycles.** (O protsessakh gidratatsii v tsementnom betone pri ego tsiklicheskom zamorazhivani). Chekhovskii, I.U.V., et al, *Kolloidnyi zhurnal*, Sep.-Oct. 1985, 47(5), p.998-1001, In Russian with English summary. 7 refs.

Spitsyn, A.N., Ganiev, A.G.  
**Ice formation, Concrete freezing, Concretes, Freeze thaw cycles, Cryogenic structures, Cements, Porosity, Moisture transfer.**

40-2808

**Studying the properties of aqueous microemulsions at low temperatures using the NMR method.** (Issledovanie svoistv vodnykh mikroemul'sii metodom IAMR v oblasti nizkikh temperatur). Veselova, O.V., et al, *Kolloidnyi zhurnal*, Nov.-Dec. 1986, 47(6), p.1027-1033, In Russian with English summary. 18 refs.

Nikolaev, B.P., Shliakov, A.M.  
**Water structure, Supercooling, Molecular structure, Hygroscopic water, Intermolecular forces.**

40-2809

**Studies of surfaces stimulating the freezing of water.** (Issledovanie poverkhnostei stimuliruiushchikh zamerzanie vody). Dubrovich, N.A., et al, *Kolloidnyi zhurnal*, Nov.-Dec. 1986, 47(6), p.1172-1175, In Russian with English summary. 15 refs.

Kuz'min, V.L., Shiniayev, B.M.  
**Phase transformations, Supercooling, Ice formation, Nucleation, Ice nuclei, Analysis (mathematics).**

40-2810

**Detecting the climatic effects of increasing carbon dioxide.** MacCracken, M.C., ed, Washington, D.C., U.S. Department of Energy Dec. 1985, 198p., DOE/ER-0235, Refs. passim. For selected papers see 1-33442 and F-33443, or 40-2811.

**Ice sheets, Temperature, Carbon dioxide, Climatic changes, Sea ice distribution, Snow cover distribution, Permafrost, Ice.**

The objective of this volume of the State-of-the-Art series is to document what is known about detecting the CO<sub>2</sub>-induced changes in climate and to describe the uncertainties and unknowns associated with this monitoring and analysis effort. The various approaches for detecting CO<sub>2</sub>-induced climate changes are discussed first, followed by a review of applications of these strategies to the various climatic variables that are expected to be changing. Finally, recommendations are presented for research and analysis activities that would contribute to a more definitive identification of the CO<sub>2</sub>-induced climate signal.

40-2811

**Cryosphere and climate change.** Barry, R.G., Washington, D.C., U.S. Department of Energy, Dec. 1985, p.109-148, DOE/ER-0235, Refs. p.140-148.

**Ice sheets, Climatic changes, Snow cover distribution, Sea ice.**

World distribution of snow cover and sea ice, and their interaction with climate, are discussed and illustrated. Tables are included showing the area and volume of antarctic grounded ice sheet and of the floating ice shelves; the time series of sea ice areas for the Antarctic, standardized by the 1973-1984 base period mean and standard deviations, are also shown. From a literature review it is concluded that the clearest indication of CO<sub>2</sub>-induced climate changes in the cryosphere will be provided by trends in annual lake freeze-up and break-up dates. These show a strong relationship to transition season temperatures. Snow cover and sea ice are important components of the global climate system, but these cryospheric variables are each affected by many climatic factors and show large interannual and regional variability.

40-2812

**Isotopic composition of atmospheric O<sub>2</sub> in ice linked with aeglication and global primary productivity.** Bender, M., et al, *Nature*, Nov. 28, 1985, 318(6044), p.349-352, 25 refs.

Labeyrie, L.D., Raynaud, D., Lorius, C.  
**Bubbles, Isotopes, Ice models, Ice composition, Paleoclimatology, Antarctica—Dome C.**

In photosynthesis, O<sub>2</sub> is continuously formed from H<sub>2</sub>O and released to the atmosphere. Coupled with respiration, photosynthesis forms a loop in which oxygen isotopes are exchanged between O<sub>2</sub> and H<sub>2</sub>O. Here, data are presented on the changes, during the past 22 kyr approximately, in the delta O-18 of atmospheric O<sub>2</sub> trapped in the ice core Dome C. The results show that the isotopic composition of atmospheric O<sub>2</sub> has indeed varied along with that of sea water, and that the delta O-18 (O<sub>2</sub>) record offers a tool for studying several important aspects of the global cycles of O<sub>2</sub> and H<sub>2</sub>O in relation to the climate. (Auth. mod.)

40-2813

**Non-steady ice-sheet model incorporating longitudinal stresses.** Alley, R.B., *Ohio State University. Institute of Polar Studies. Report*, 1984, No.84, 100p., 46 refs.

**Ice sheets, Ice mechanics, Ice creep, Ice deformation, Sea level, Models, Antarctica—East Antarctica.**

In order to study the effect of sea-level changes on inland ice sheets, a new ice-flow model has been developed that explicitly includes longitudinal stresses. Two-dimensional flow is assumed, and the flow-law parameter and longitudinal-deviatoric stress are taken to be weighted averages over depth. The flow-law equations for longitudinal and shear deformation are then averaged over thickness. The resulting equations, together with continuity and a bottom-sliding relation, form a simple one-dimensional system of equations that describes changes in ice-sheet configuration over time. Sea-level rise causes a wave of thinning to propagate upglacier in an ice sheet with terminal position controlled by sea level. The wave of thinning slows, diffuses, and is damped as it moves upglacier; thus, perturbations near the coast must be large and long lasting to affect inland regions. Model calculations show that post-Wisconsinian sea-level rise has caused 110 m thinning at Dome C, East Antarctica, and that response is now 70 percent complete. Accumulation rate probably increased at the same time, however, and including this in the model reduces calculated thinning. For a 10 percent increase in accumulation rate from Wisconsinian to Holocene, there has been 75 m post-Wisconsinian thinning due to combined effects of sea-level rise and accumulation-rate increase. (Auth.)

40-2814

**Glacial events in the Transantarctic Mountains: a record of the east antarctic ice sheet.** Mayewski, P.A., et al, *American Geophysical Union. Antarctic research series*, 1985, 36(12), Geology of the central Transantarctic Mountains, p.275-324, Refs. p.321-324.

Goldthwait, R.P.  
**Glacial geology, History, Moraines, Ice sheets, Antarctica—Transantarctic Mountains.**

The Transantarctic Mountains form a mountainous division between East and West Antarctica extending 2900 km from the Pensacola Mountains to northern Victoria Land. The mountains constrict the flow of East Antarctic ice, creating outlet glaciers which form a connection between the inland ice sheet and the Ross Ice Shelf. Glacial deposits recording former ice surface levels of outlet glaciers can therefore be used to interpret East Antarctic ice sheet and Ross Ice Shelf fluctuations. A glacial history is formulated based upon the investigation and comparison of two areas: (1) the Queen Maud Mountains, a 450-km stretch from Scott Glacier to Beardmore Glacier and (2) southern Victoria Land, a 150-km stretch from Taylor Valley to Fry Glacier. Four glacial events are recognized, differentiated, and correlated with datable deposits in the Transantarctic Mountains. The general implications derived from the resultant glacial history and ice surface reconstruction suggest four conclusions which are set forth and explained. (Auth. mod.)

40-2815

**Survey of progress in remote sensing of snow and ice.** Rango, A., *International Association of Hydrological Sciences. Publication*, [1983], No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, Aug. 1983. Proceedings, p.347-359, With French summary. Refs. p.356-359.

**Snow cover distribution, Ice conditions, Remote sensing, Runoff, Snowmelt, Snow water equivalent, Mapping, Microwaves, Ice cover thickness, Lake ice, River ice.**

40-2816

**Resolution in operational remote sensing of snow cover.** Kango, A., et al, *International Association of Hydrological Sciences. Publication*, [1983], No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, Aug. 1983. Proceedings, p.371-382, With French summary. 9 refs.

Martinez, J., Foster, J., Marks, D.  
**Snow cover distribution, Remote sensing, Runoff forecasting, Snowmelt, Seasonal variations, Mountains, Models, LANDSAT.**

40-2817

**Hydrological research in the AgRISTARS programme.** Rango, A., et al, *International Association of Hydrological Sciences. Publication*, [1983], No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, Aug. 1983. Proceedings, p.579-589, 24 refs.

**Soil water, Snow cover effect, Hydrology, Remote sensing, Microwaves, Models, Agriculture, Snow water equivalent.**

40-2818

**Satellite remote sensing for ice sheet research.** Thomas, R.H., et al, *U.S. National Aeronautics and Space Administration. Technical memorandum*, Nov. 1985, NASA TM-86233, 32p., N86-17817, 23 refs.

**Ice sheets, Remote sensing, Spacecraft, Height finding, Topographic features, Greenland.**

Potential research applications of satellite data over the terrestrial ice sheets of Greenland and Antarctica are assessed and actions required to ensure acquisition of relevant data and appropriate processing to a form suitable for research purposes are recommended. Relevant data include high-resolution visible and SAR imagery, infrared, passive-microwave and scatterometer measurements, and surface topography information from laser and radar altimeters. (Auth.)

40-2819

**Keeping towers safe in an icy environment.** Reed, A.M., *Telephone engineer and management*, July 1, 1985, 89(13), p.66-70.

**Icing, Transmission lines, Towers, Snow loads, Ice loads, Snow accumulation, Countermeasures, Mountains, Snow density, Slope orientation.**

40-2820

**Strong fluctuation theory for scattering, attenuation, and transmission of microwaves through snowfall.** Jin, Y.-Q., et al, *IEEE transactions on geoscience and remote sensing*, Sep. 1985, GE-23(5), p.754-760, 10 refs.

Kong, J.A.  
**Wave propagation, Transmission, Microwaves, Snowfall, Scattering, Attenuation, Theories.**

40-2821

**Simulation of an evaporative solar salt pond.** Manganaro, J.L., et al, *Industrial and engineering chemistry process design and development*, Oct. 1985, 24(4), p.1245-1251, 17 refs.

Schwartz, J.C.  
**Evaporation, Ice growth, Ice melting, Heat transfer, Mass transfer, Ponds, Solar radiation, Solutions, Salinity, Mathematical models, Air temperature, Temperature distribution.**

40-2822

**Study and economic development of the North during the Soviet period.** (Izuchenie i khoziaistvennoe osvoenie Severa v sovetskii period). Slavin, S.V., ed, *Letopis' Severa*, 1985, Vol.11, 256p., In Russian with English table of contents. Refs. passim. For selected paper see 40-2823.

**Expeditions, Ice navigation, Economic development, Northern Sea Route, Exploration, Polar regions.**

40-2823

**Role of science in development of the Northern Sea Route.** (Rol' nauki v osvoenii Severnogo morskogo puti). Treshnikov, A.F., *Letopis' Severa*, 1985, No.11, p.59-68, In Russian.

**Sea ice distribution, Ocean currents, Ice navigation, Icebreakers, Northern Sea Route, Expeditions, Ice surveys, Arctic Ocean.**

- 40-2824**  
Constructors of Leningrad are building Severobaykalsk. [Stroitel'. Leningrada vozvodiat Severobaykalsk]. Savetev, R., *Na stroikakh Rossii*, Sep. 1985, No.9, p.15-17, In Russian.  
Urban planning, Permafrost bases, Large panel buildings, Foundations, Baykal Amur railroad, Taiga, Reinforced concretes, Residential buildings, Permafrost, Cranes (hoists), Industrial buildings.
- 40-2825**  
Using a sodium adipate admixture for preventing the freezing of loose sand. [Primenenie dobavki PASHch-1 dlia predotvrashcheniia smerzaniia peska]. Mel'nik, I.U., et al, *Na stroikakh Rossii*, Sep. 1985, No.9, p.47, In Russian.  
Faingold, I., Lagolda, A., Romanova, N.  
Winter concreting, Concrete aggregates, Sands, Frozen cargo, Frost protection, Concrete admixtures, Air entrainment.
- 40-2826**  
Growth of the roots of Arctic plants. [Rost kornei arkticheskikh rastenii]. Tyrtakov, A.P., *Moskovskoe obshchestvo ispytaniia prirody. Biulleten'*, Otdel biologicheskikh, Nov.-Dec. 1985, 90(6), p.128-135, In Russian with English summary. 18 refs.  
Roots, Plant physiology, Cryogenic soils, Arctic landscapes, Soil erosion, Plant ecology, Solifluction, Ecosystems.
- 40-2827**  
Organization of public service and amenities in settlements of construction workers in the BAM region. [Blagoustroistvo poselkov stroitelei na BAME]. Sobchenko, M., et al, *Na stroikakh Rossii*, March 1985, No.3, p.40-42, In Russian.  
Gol'dgruber, B.  
Houses, Water pipelines, Permafrost beneath structures, Permafrost hydrology, Water supply, Subpermafrost ground water, Baykal Amur railroad, Utilities, Thermal insulation.
- 40-2828**  
Combined piles for permafrost. [Kombinirovannye svai dlia vechnomerzlykh gruntov]. Kolesov, A., et al, *Na stroikakh Rossii*, March 1985, No.3, p.48-49, In Russian.  
Krizhanovskii, S., Sadovskii, A., Kuprin, V.  
Permafrost bases, Foundations, Piles, Construction materials, Wood, Steels, Reinforced concretes.
- 40-2829**  
Protecting the rear of the Northern Fleet during combat activities. [Tylovoe obespechenie boevykh deistvii Severnogo flota]. Slavgorodskii, A., *Morskoi sbornik*, Nov. 1985, No.11, p.18-22, In Russian. 4 refs.  
Military facilities, Military operation, Military transportation, Logistics, Ice navigation, Arctic Ocean.
- 40-2830**  
Improving the accuracy of radar measurements of sea ice thickness by capstral processing of reflected signals. [Povyshenie tochnosti radiolokatsionnykh izmerenii tolshchiny morskogo l'da putem kepstral'noi obrabotki otrazhennykh signalov]. Bogorodskii, V.V., et al, *Radiotekhnika i elektronika*, Feb. 1985, 30(2), p.291-297, In Russian. 7 refs.  
Boiarskii, V.I., Oganessian, A.G.  
Radar echoes, Sea ice distribution, Ice cover thickness, Drift stations.
- 40-2831**  
Parameters and schemes for power-line replacements in ice-melting "wire-ground" circuits. [Parametry i skhemy zameshcheniia vozdukhnykh lini elek-tropredachi v skhemakh plavki gololeda tipa "provod-zemlia"]. Zhezhenlenko, I.V., et al, *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Energetika*, May 1985, No.5, p.19-23, In Russian. 6 refs.  
Marchenko, I.I.  
Power line icing, Ice melting, Artificial melting.
- 40-2832**  
Mobile railroad tracks in quarries of Siberia and the North. [Ekspluatatsiia peredvizhnykh zheleznodorozhnykh puti na kar'erakh Sibiri i Severa]. Kovalevskii, E.P., *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Gornyi zhurnal*, 1985, No.5, p.75-77, In Russian. 4 refs.  
Quarries, Artificial thawing, Railroad tracks, Winter maintenance, Soil freezing, Frost penetration.
- 40-2833**  
Studying the resistance of frozen peat to cutting. [Issledovanie soprotivleniia rezaniiu merzlogo torfa]. Lishtvan, I.I., et al, *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Gornyi zhurnal*, 1985, No.8, p.23-25, In Russian. 4 refs.  
Romanenko, I.I., Davidovskii, P.N.  
Peat, Earthwork, Frozen ground strength, Organic soils, Swamps, Ground ice, Soil freezing.
- 40-2834**  
Dependence of the thermal conductivity coefficient of peat on its physical parameters. [Zavisimost' koeffitsienta teploprovodnosti torfa ot fizicheskikh parametrov]. Aleksandrov, B.M., *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Gornyi zhurnal*, 1985, No.9, p.14-17, In Russian. 2 refs.  
Organic soils, Peat, Mining, Soil freezing, Soil physics, Soil composition, Tests, Laboratory techniques.
- 40-2835**  
Calculating the cutting strength of frozen ground. [Opredelenie sily rezaniia merzlykh porod]. Kisenko, A.A., et al, *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Gornyi zhurnal*, 1985, No.10, p.3-4, In Russian. 4 refs.  
Shemet, I.A., Tanin-Shakhov, A.V.  
Ice cutting, Frozen fines, Clays, Frozen ground strength, Frozen rocks, Ground ice.
- 40-2836**  
Hydrogeochemical and gas studies in the exploration for oil and gas in Yakutia. [Opyt primeneniia gidrogeokhimicheskikh issledovanii s tsel'iu poiskov nefi i gaza v IAKutii]. Ivanova, I.N., *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Neft' i gaz*, Aug. 1985, No.8, p.3-6, In Russian.  
Gas wells, Hydrogeochemistry, Continuous permafrost, Exploration.
- 40-2837**  
Improved winter concreting methods. [Sovershenstvovanie metodov proizvodstva betonnykh rabot v zimnii period]. Belen'kii, B.S., et al, *Energeticheskoe stroitel'stvo*, Feb. 1985, No.2, p.49-52, In Russian. 3 refs.  
Korogin, I.U.K., Savkin, A.I.  
Foundations, Concrete curing, Frost protection, Winter concreting, Frozen ground, Concrete structures, Artificial thawing, Freeze thaw cycles.
- 40-2838**  
Development and improvement of construction equipment designed for Siberia and the North. [Sozdanie i sovershenstvovanie stroitel'noi tekhniki dlia ratonov Sibiri i Severa]. Prutovskii, V.P., et al, *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.2-3, In Russian.  
Makushkin, D.O.  
Drilling, Construction equipment, Rock excavation, Winter maintenance, Continuous permafrost, Roads, Frozen ground mechanics, Airports, Frozen ground thermodynamics.
- 40-2839**  
Equipment for the construction of snow-ice roads and airport pavements. [Mashina dlia stroitel'stva snegol'diannykh dorozhnykh i aerodromnykh pokrytii]. Rongonen, V.E., et al, *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.3-4, In Russian.  
Shatalov, N.V.  
Construction equipment, Airports, Snow (construction material), Ice (construction material), Snow roads, Ice roads, Pavements.
- 40-2840**  
Selection of basic parameters of snow-compaction vibro-plates. [Vybór osnovnykh parametrov vibroplity snegouplotniushchek mashiny]. Valsberg, I.S., et al, *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.4-6, In Russian. 4 refs.  
Ivanov, A.N.  
Construction equipment, Snow roads, Snow compaction, Analysis (mathematics).
- 40-2841**  
Selecting basic parameters of snow-compaction machines. [Vybór osnovnykh parametrov snegouplotniushchek mashiny]. Ivanov, A.N., et al, *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.6-7, In Russian. 3 refs.  
Rongonen, V.E.  
Construction equipment, Snow roads, Ice roads, Snow compaction.
- 40-2842**  
Testing a new cutting instrument. [Isipytiia novogo rezhushchego instrumenta]. Bondarenko, V.P., *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.7-8, In Russian.  
Permafrost physics, Frozen rock strength, Earthwork, Excavation.
- 40-2843**  
Reinforcement of drill bits for permafrost conditions. [Uprochnenie buril'nykh instrumentov dlia razrabotki merzlykh gruntov]. Gertsog, E.V., et al, *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.9, In Russian.  
Suslov, A.A.  
Permafrost physics, Frozen rock strength, Drilling, Drills.
- 40-2844**  
Increasing the efficiency of drilling technology. [O povyshenii effektivnosti buril'noi tekhniki]. Goltzman, I.A., *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.9-10, In Russian. 1 ref.  
Rock drilling, Drilling fluids, Permafrost, Air circulation.
- 40-2845**  
Means and systems for heating cabins of construction machines. [Sredstva i sistemy otopeniia kabin stroitel'nykh i dorozhnykh mashin]. Karepov, V.A., *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.11-12, In Russian.  
Construction equipment, Transportation, Construction materials, Electric heating, Ventilation, Motor vehicles.
- 40-2846**  
Experimental studies of the process of percussion failure of frozen ground. [Eksperimental'noe issledovanie protsessha chastoudarnogo razrusheniia merzlogo grunta]. Sitnikov, I.U.N., et al, *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.12, In Russian.  
Shadrin, A.V., Odyshev, A.G., Pesotskaia, R.I.  
Percussion drilling, Frozen ground strength.
- 40-2847**  
VPL-149A all-terrain fire engine. [Pozharnyi vezdekhod VPL-149A]. Mordukhovich, A.I., *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.15, In Russian.  
Forest fires, Taiga, Paludification, All terrain vehicles.
- 40-2848**  
KT-703 universal engine for airports. [Aerodromnaia universal'naiia mashina KT-703]. Nishnevich, E.L., et al, *Stroitel'nye i dorozhnye mashiny*, Oct. 1985, No.10, p.16, In Russian.  
Airports, Pavements, Winter maintenance, Snow removal.
- 40-2849**  
Development of soddy, deeply podzolized soils of the lower Angara River area. [Razvitiie dnerovo-glubokopodzolistykh pochv nizhnego Prangaraia]. Krusekha, E.N., et al, *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Nauchnye doklady vysshikh shkoly. Biologicheskie nauki*, 1985, No.5, p.89-94, In Russian with English summary. 11 refs.  
Kutsunov, V.M., Vedrva, E.F., Bugakov, I.P.  
Taiga, Revegetation, Forest soils, Plant ecology, Podsol, Cryogenic soils, Forest fires, Soil erosion, Soil composition.
- 40-2850**  
Studying sorptional receivers of radiation, designed for noncontact control of ground surface temperature near active wells and pipelines. [Issledovanie sorbtsionnykh priemnikov izlucheniia prednaznachennykh dlia beskontaktnogo kontroliia temperatury poverkhnosti grunta blizhi deistviushchikh skvazhin i truboprovodov]. Ageeva, O.S., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Neft' i gaz*, Apr. 1985, No.4, p.65-67, In Russian. 4 refs.  
Permafrost, Soil temperature, Wells, Pipelines, Permafrost control, Measuring instruments, Surface temperature.

- 40-2851**  
Ice cover reinforcement by artificial layer-by-layer freezing of water. [Usilenie ledianogo pokrova posloynnym namorazhivaniem vody]. Vinobitskiĭ, P.A., et al, *Promyshlennaya teplo tekhnika*, 1985, No.6, p.28-33, In Russian with English summary. 4 refs.  
Titarenko, A.I., Shpet, N.G.  
Ice roads, Snow roads, Winter maintenance.
- 40-2852**  
Snowmelt runoff models for operational forecasts. Martinec, J., *Nordic hydrology*, 1985, 16(3), p.129-136, 7 refs.  
Runoff forecasting, Remote sensing, Snowmelt, Snow cover distribution, Snow accumulation, Snowfall, Models.
- 40-2853**  
Characteristics of snowmelt induced peak flows in a small northern basin. Bengtsson, L., *Nordic hydrology*, 1985, 16(3), p.137-156, 26 refs.  
Snowmelt, Runoff, Flow rate, Snow cover effect, Forestry, Watersheds, Meadows, Seasonal variations, Rain, Sweden.
- 40-2854**  
Aerial roof moisture surveys. Tobiasson, W., *Military engineer*, Aug. 1985, 77(502), MP 2022, p.424-425.  
Roofs, Moisture detection, Infrared photography, Penetration, Surveys.
- 40-2855**  
Evaluating trafficability. McKim, H.L., *Military engineer*, Aug. 1985, 77(502), MP 2023, p.474-475.  
Trafficability, Soil water, Frost penetration, Water content, Tracked vehicles.
- 40-2856**  
Clear improvement in obscuration. Palmer, R.A., *Military engineer*, Aug. 1985, 77(502), MP 2067, p.476-477.  
Blowing snow, Visibility, Military operation, Fog, Design.
- 40-2857**  
Cold factor. Abele, G., *Military engineer*, Aug. 1985, 77(502), MP 2024, p.480-481.  
Cold weather construction, Cold weather operation, Military engineering, Temperature effects, Wind velocity, Snowfall, Time factor, Wind chill, Environments.
- 40-2858**  
Effect of a radome on a directional radio antenna. [Wirkung eines Radoms an einer Richtfunkantenne]. Preibisch, H., *Fernmeldepraxis*, Sep. 10, 1985, No.17, p.675-683, In German.  
Icing, Antennas, Radomes, Snowfall, Wave propagation, Radio waves, Transmission, Freezing, Rain.
- 40-2859**  
New method for ice thermal storage cooling system, using heat pipes. Kawakami, S., et al, *Refrigeration*, 1985, 60(687), p.84-94, In Japanese. 2 refs.  
Matsumoto, K., Maeda, K.  
Air conditioning, Heat pipes, Cold storage, Cooling, Computer programs.
- 40-2860**  
Spot weldability of cold-rolled high strength steel sheets. Kokubo, I., et al, *Research and development: Kobe steel engineering reports*, July 1985, 35(3), p.81-84, In Japanese. 5 refs.  
Korida, K., Shirasawa, H., Tanaka, Y.  
Offshore structures, Steel structures, Tensile properties, Welding, Cold weather construction, Electrical resistivity.
- 40-2861**  
Method of collecting water samples from immediately below an ice cover. Jones, R., *Hydrobiologia*, Sep. 30, 1985, 128(3), p.229-232, 4 refs.  
Sampling, Ice cover effect, Water, Instruments.
- 40-2862**  
Seasonal variations in weathering and toxicity of crude oil on seawater under Arctic conditions. Sydes, L.K., et al, *Environmental science and technology*, Nov. 1985, 19(11), p.1076-1081, 43 refs.  
Oil spills, Water pollution, Weathering, Crude oil, Sea water, Sanitary engineering, Polar regions.
- 40-2863**  
Parking structures: unique requirements. *Concrete international*, Dec. 1985, 7(12), p.59-63.  
Concrete structures, Pavements, Freeze thaw cycles, Damage, Corrosion, Water penetration, Road maintenance, Design, Countermeasures.
- 40-2864**  
Challenge of offshore concrete structures. Hoff, G.C., *Concrete international*, Aug. 1985, 7(8), p.12-22.  
Offshore structures, Concrete structures, Ice loads, Maintenance, Design criteria.
- 40-2865**  
ACI state-of-the-art report—offshore concrete structures for the Arctic. *Concrete international*, Aug. 1985, 7(8), p.23-33.  
Offshore structures, Concrete structures, Ice loads, Subsea permafrost, Ground thawing, Sea ice, Maintenance, Design, Construction materials, Caissons, Ocean waves, Ocean environments, Beaufort Sea.
- 40-2866**  
Icy challenge. Rojanski, M., et al, *Concrete international*, Aug. 1985, 7(8), p.38-44, 10 refs.  
Hsu, Y.-Y.  
Offshore structures, Ice loads, Ice conditions, Concrete structures, Steel structures, Ice pressure, Design, Construction materials, Reinforced concretes.
- 40-2867**  
Field observations of ice action on concrete structures in the Baltic Sea. Engelbrektson, A., et al, *Concrete international*, Aug. 1985, 7(8), p.48-52, 3 refs.  
Janson, J.E.  
Offshore structures, Concrete structures, Ice loads, Impact strength, Damage, Ice pressure, Construction materials, Ice cover effect.
- 40-2868**  
Geotechnical properties and freeze/thaw consolidation behavior of sediment from the Beaufort Sea, Alaska. Lee, H.J., et al, *U.S. Geological Survey. Open-file report*, Oct. 1985, 85-612, MP 2025, 83p., 23 refs.  
Winters, W.J., Chamberlain, E.J.  
Bottom sediment, Freeze thaw cycles, Soil compaction, Subsea permafrost, Ground ice, Ice scoring, Ocean bottom, Seasonal freeze thaw, Offshore structures.
- 40-2869**  
Superionic transition in ice. Ryzhkin, I.A., *Solid state communications*, Oct. 1985, 56(1), p.57-60, 15 refs.  
Ice physics, Ion density (concentration), Defects, Analysis (mathematics).
- 40-2870**  
Remotely-sensed vegetation classification as a snow depth indicator for hydrological analysis in sub-arctic Finland. Clark, M.J., et al, *Fennia*, 1985, 163(2), p.195-216, 29 refs.  
Vegetation, Remote sensing, Snow depth, Snow cover effect, Snow retention, Snow hydrology, Classifications, Models, Finland.
- 40-2871**  
Deep-weathering in Sweden. Lundqvist, J., *Fennia*, 1985, 163(2), p.287-292, 26 refs.  
Weathering, Glacial erosion, Pleistocene, Paleoclimatology, Geomorphology, Sweden.
- 40-2872**  
Deep-weathered rock in western Sweden. Hillefors, A., *Fennia*, 1985, 163(2), p.293-301, 11 refs.  
Weathering, Rocks, Paleoclimatology, Ice mechanics, Glaciation, Quaternary deposits, Glacial erosion, Sweden.
- 40-2873**  
Preliminary results from experimental weathering studies. Swantesson, J., *Fennia*, 1985, 163(2), p.303-307, 11 refs.  
Frost weathering, Freeze thaw cycles, Moisture, Rocks, Experimentation, Cold chambers, Sweden.
- 40-2874**  
Weathering and weathering residuals on the Canadian Shield. Bouchard, M., *Fennia*, 1985, 163(2), p.327-332, 19 refs.  
Weathering, Glaciation, Pleistocene, Geomorphology, Geochemistry, Canada.
- 40-2875**  
Effect of jointing on glacial erosion of bedrock hills in southern Finland. Laitakari, I., et al, *Fennia*, 1985, 163(2), p.369-371, 6 refs.  
Aro, K.  
Glacial erosion, Paleoclimatology, Rocks, Striations, Frost weathering, Periglacial processes, Finland.
- 40-2876**  
Atmospheric channel performance measurements at 10 to 100 GHz. Espeland, R.H., et al, *U.S. National Telecommunications and Information Administration. Report*, Apr. 1984, 84-149, 122p. PB84-211 325.  
Violette, E.J., Allen, K.C.  
Radio waves, Snowfall, Atmospheric attenuation, Wave propagation, Fog, Radio communication, Countermeasures, Rain.
- 40-2877**  
Arctic routes of the USSR. [Arkticheskie trasy strany]. Burkov, G., et al, *Tekhnika i vooruzhenie*, July 1985, No.7, p.3-4, In Russian.  
Arikainen, A.  
Icebreakers, Ice navigation, Air cushion vehicles, Ships, Cargo, Northern Sea Route.
- 40-2878**  
Comparative analysis of the Bashkir Transural and Central Yakutia segetal communities. [Sravnitel'nyĭ analiz segetal'noi flory Bashkirskego Zaural'ia i tsentral'noi Yakutii]. Sleptsova, N.P., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Nauchnye doklady vysshei shkoly. Biologicheskie nauki*, 1985, No.7, p.63-67, In Russian with English summary.  
Rudakov, K.M.  
Plant ecology, Continuous permafrost, Plant physiology, Active layer, Subpolar regions.
- 40-2879**  
Ecologic peculiarities of moss communities in fir and spruce woods of southern taiga. [Ekologicheskie osobennosti sinuzii mokoobraznykh v el'niko-kislichnike iuzhnoi taigi]. Vaulina, E.L., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Nauchnye doklady vysshei shkoly. Biologicheskie nauki*, 1985, No.10, p.64-68, In Russian with English summary. 13 refs.  
Cryogenic soils, Taiga, Plant ecology, Plant physiology, Ecosystems, Mosses.
- 40-2880**  
Under low temperature conditions. [V usloviakh nizkikh temperatur]. Kaninskii, O., *Tekhnika i vooruzhenie*, Jan. 1986, No.1, p.8-9, In Russian.  
Military equipment, Winter maintenance, Polar regions, Snowstorms.
- 40-2881**  
Operation of engineering equipment in freezing weather. [Ekspluatatsiia inzhenernoi tekhniki zimoi]. Ermachenkov, V., et al, *Tekhnika i vooruzhenie*, Jan. 1986, No.1, p.18-19, In Russian.  
Chechenkov, M.  
Military equipment, Military engineering, Military transportation, Winter maintenance.
- 40-2882**  
Testing the propeller drive of the icebreaker *Kapitan Evdokimov*. [Ispytaniia valoprovodov ledokola "Kapitan Evdokimov"]. Chernov, S., *Rechnoi transport*, 1985, No.7, p.34-35, In Russian.  
Ice navigation, Icebreakers, Propellers, Tests.
- 40-2883**  
Ice passages. [Ledovye relsy]. Liudogovskii, V., *Rechnoi transport*, 1985, No.7, p.40-41, In Russian.  
Icebreakers, Icebound rivers, Polynyas, Ice navigation, Water level, USSR—Lena River.
- 40-2884**  
Optimal number of wells in a cluster under West Siberian conditions. [Optimal'noe chislo skvazhin v kuste v usloviakh Zapadnoi Sibiri]. Kalinin, S.G., et al, *Neftianoe khoziaistvo*, June 1985, No.6, p.17-19, In Russian.  
Arkhipov, I.G., Golov, V.A.  
Drilling, Oil wells, Frozen rocks.

40-2885

Complex of machines and equipment for preparing paludal surfaces for construction. (Kompleks mashin i mekhanizmov dlia podgotovki zabolochennoi poverkhnosti k stroitel'stvu). Arena, V.Zh., et al, *Stroitel'nye i dorozhnye mashiny*, Sep. 1985, No.9, p.18-19, In Russian. 5 refs.

Shpak, D.N.

Swamps, Drilling, Land reclamation, Drainage, Forest land, Paludification, Construction equipment, Permafrost distribution, Sands.

40-2886

Machines for winter maintenance of roads. (Mashiny dlia zimnego soderzhanii dorog). Stanovoi, L.V., et al, *Stroitel'nye i dorozhnye mashiny*, Aug. 1985, No.8, p.13-14, In Russian.

Bryksenkov, A.G.

Road maintenance, Winter maintenance, Snow removal, Loading.

40-2887

Machines for spreading antifreezes. (Mashiny dlia raspredeleniia antigoleznykh materialov). Gornyi, B.Z., *Stroitel'nye i dorozhnye mashiny*, Aug. 1985, No.8, p.14-15, In Russian.

Winter maintenance, Road maintenance, Glaze, Chemical ice prevention, Snow removal.

40-2888

Report on the 1983 glaciological survey. (Relazioni della campagna glaciologica 1983). Comitato glaciologico italiano. *Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1984, 7(2), p.59-88, In Italian. Glacier surveys, Mountain glaciers, Alpine glaciation, Precipitation (meteorology), Statistical analysis.

40-2889

Stress corrosion cracking of subzero treated SUS 301 steel single crystal.

Uchida, H., et al, *Society of Materials Science, Japan Journal*, July 1985, 34(382), p.809-815, In Japanese. 20 refs.

Koteraawa, K., Sumita, M., Yamada, I.

Low temperature tests, Steels, Cracking (fracturing), Corrosion, Stresses.

40-2890

Thermal expansion of rocks subjected to cyclic temperature change between 110 K and 300 K.

Ehara, S., et al, *Society of Materials Science, Japan Journal*, July 1985, 34(382), p.857-863, In Japanese. 18 refs.

Yanagidani, T., Terada, M.

Thermal expansion, Rock mechanics, Cracking (fracturing), Temperature variations, Strains, Cooling, Heating.

40-2891

Thermal expansion of saturated rocks subjected to cyclic temperature change between 110 K and 300 K.

Ehara, S., et al, *Society of Materials Science, Japan Journal*, July 1985, 34(382), p.864-870, In Japanese. 14 refs.

Yanagidani, T., Terada, M.

Thermal expansion, Rock mechanics, Cracking (fracturing), Freezing, Melting, Ice formation, Capillary ice, Strains, Temperature effects, Low temperature tests.

40-2892

Scattering phase matrix for hexagonal ice crystals computed from ray optics.

Takano, Y., et al, *Applied optics*, Oct. 1, 1985, 24(19), p.3254-3263, 25 refs.

Jayaweera, K.

Ice crystal structure, Ice crystal optics, Light scattering, Analysis (mathematics), Backscattering.

40-2893

Concrete water tanks in Ontario.

Slater, W.M., *Canadian journal of civil engineering*, June 1985, 12(2), p.325-333, With French summary. 37 refs.

Freezing, Tanks (containers), Ice formation, Concrete structures, Ice pressure, Stresses, Tensile properties, Defects, Seepage, Temperature gradients.

40-2894

Ice shelf creep rates and the flow law of ice.

Holdsworth, G., *Nature*, Feb. 27, 1986, 319(6056), p.727, 13 refs.

Ice shelves, Ice creep, Flow rate, Ice crystal structure.

40-2895

Observation of a dislocation source in ice by synchrotron radiation topography.

Ahmad, S., et al, *Nature*, Feb. 20, 1986, 319(6055), p.659-660, 9 refs.

Ohtomo, M., Whitworth, R.W.

Ice crystal structure, Ice deformation, X ray analysis.

40-2896

Calculating ice pressure resistance of ships. (Raschet ledovogo soprotivleniia sudov). Zuev, V., *Rechnoi transport*, 1986, No.1, p.38-39, In Russian.

Ice navigation, Ice cover thickness, Ice pressure, Icebreakers, Ice conditions, Analysis (mathematics).

40-2897

Extension of navigation on the Volga-Balta sluiced section. (Prodlenie navigatsii na Volgo-Balte). Porozhskii, R., et al, *Rechnoi transport*, 1985, No.12, p.38-39, In Russian.

Vorontsov, V.

River ice, Ice floes, Slush, Sluices (hydraulic engineering), Ice jams, Walls, Ice prevention, Icing.

40-2898

Icebreaking-ice removal compounds for ships. (Ledokol'no-ledoochistitel'nye sostavy).

Bogdanov, B., *Rechnoi transport*, 1985, No.10, p.32-33, In Russian.

River ice, Ice navigation, Ice breaking, Ice removal.

40-2899

Experimental winter anchorage of the icebreaker *Kapitan Babichev* with shut-off engines. (Opyt kholodnogo ostoia ledokola "Kapitan Babichev").

Burygin, L., et al, *Rechnoi transport*, 1985, No.4, p.34-36, In Russian.

Volovikov, V., Korolev, V.

Icebreakers, Winter maintenance, Diesel engines, Heating.

40-2900

Testing rotary cutting-bits designed for frozen ground. (Ispytaniia vrashchaisushchikhsia reztsov dlia razrabotki merzlykh gruntov).

Bondarenko, V.P., *Stroitel'nye i dorozhnye mashiny*, Dec. 1985, No.12, p.6-7, In Russian.

Earthwork, Excavation, Rotary drilling, Permafrost.

40-2901

Construction of water-impervious screens under permafrost conditions. (Sozdanie protivofil'tratsionnykh zaves v usloviakh mnogoletnei merzloty).

Kipko, E.I.A., et al, *Shakhtnoe stroitel'stvo*, July 1985, No.7, p.12-13, In Russian.

Mining, Excavation, Permafrost hydrology, Frozen rocks, Impervious screens, Ground water control.

40-2902

Increasing the efficiency and safety of shaft sinking by artificial freezing of rocks. (Puti povysheniia na-dezhnosti i effektivnosti rabot po prokhodka shakhtnykh stvolov sposobom zamorazhivaniia gornykh porod).

Shparber, P.A., *Shakhtnoe stroitel'stvo*, Aug. 1985, No.8, p.2-4, In Russian.

Mining, Shaft sinking, Ground water, Artificial freezing.

40-2903

Peculiarities of architectural and artistic design for industrial buildings of eastern Siberia. (Osobennosti arkhitekturno-khudozhestvennykh reshenii promyshlennnykh zdani dlia ralonov Vostochnoi Sibiri).

Butaev, O.S., *Promyshlennoe stroitel'stvo*, Dec. 1985, No.12, p.17-21, In Russian.

Industrial buildings, Permafrost beneath structures, Design.

40-2904

Urgent problems concerning stable performance of railroad tracks in freezing weather. (Neotlozhnye zadachi po obespecheniiu ustoiuchivoi raboty rel'sovogo puti v zimnikh usloviakh).

Baraboshin, V.F., *Moscow. Vsesoiuznyi nauchno-is-sledovatel'skii institut zhelez.-dorozhnogo transporta. Vestnik*, 1985, No.8, p.1-5, In Russian.

Snow removal, Railroad tracks, Winter maintenance, Railroad equipment, Snowstorms, Electric heating, Snowdrifts.

40-2905

Using electrically heated polymer-carbon compound coatings to warm up peat frozen during transportation. (Primenenie elektronagrevatel'nykh polimer-uglerodnykh kompozitsionnykh pokryti dlia razogreva smerzhshegosia pri transportirovke torfaj).

Lishtvan, I.I., et al, *Torfiania promyshlennost'*, Apr. 1985, No.4, p.27-29, In Russian. 4 refs.

Davidovskii, P.N., Tanovitskii, V.I.

Peat, Artificial thawing, Defrosting, Transportation, Electric heating.

40-2906

Predictions of glacial runoff. (Prognoz lednikovogo stoka). Diurigerov, M.B., *Priroda*, Feb. 1985, No.2, p.47-59, In Russian. 6 refs.

Glacier ablation, Mountain glaciers, Glacier ice, Glacial hydrology, Snow line, Mass balance, Heat balance, Glacier alimentation.

40-2907

Are Arctic ice conditions getting worse. (Ukhudshai-utsia li ledovye uslovia v Arktike).

Arikainen, A., et al, *Morskoi flot*, 1985, No.6, p.36-37, In Russian.

Burkov, G.

Icebreakers, Ice navigation, Ice surveys, Ice forecast-ing, Ice reporting, Northern Sea Route, Ice condi-tions, Ice cover distribution.

40-2908

Satellite-observed reflectance of snow and clouds.

Robock, A., et al, *Monthly weather review*, Nov. 1985, 113(11), p.2023-2039, 19 refs.

Kaiser, D.

Snow optics, Cloud cover, Reflectivity, Albedo, Snow cover, Light (visible radiation), Remote sensing.

40-2909

Periglacial environment.

Worsley, P., *Progress in physical geography*, 1985, 9(3), p.391-401, 20 refs.

Periglacial processes, Glacial geology, Ice wedges, Permafrost distribution, Landforms, Frost action, Sediments, Climatic factors, Sands.

40-2910

Pipeline in Canada's far north in service.

Pick, A.R., et al, *Oil and gas journal*, Aug. 19, 1985, 83(33), p.71-76, 1 ref.

Smith, J.D.

Pipelines, Permafrost beneath structures, Cold weather construction, Design.

40-2911

Two combined cryogenic processes cut sour natural-gas processing cost.

Denton, R.D., et al, *Oil and gas journal*, Aug. 19, 1985, 83(33), p.120-124.

Rule, D.D.

Liquefied gases, Cryogenics, Natural gas, Cost anal-ysis.

40-2912

Engineering geology hazards of rock glaciers.

Giardino, J.R., et al, *Association of Engineering Geologists. Bulletin*, May 1985, 22(2), p.201-215, 28 refs.

Vick, S.G.

Rock glaciers, Engineering geology, Periglacial pro-cesses, Glacier melting, Permafrost, Landforms, Gla-cier flow, Ice creep, Landslides.

40-2913

Climatic test laboratory.

Ozawa, A., et al, *Mitsubishi denki giho*, 1985, 59(5), p.8-13, In Japanese.

Hirayama, Y., Arai, T., Takahashi, Y.

Electric equipment, Snow accumulation, Icing, Cli-matic factors, Rain, Temperature variations, Tests.

40-2914

Measurement of areal water equivalent of snow by natural gamma radiation—experiences from northern Sweden.

Bergström, S., et al, *Hydrological sciences journal*, Dec. 1985, 30(4), p.465-477, With French summary. 8 refs.

Brandt, M.

Snow water equivalent, Gamma irradiation, Forecast-ing, Models, Sweden.

40-2915

Seasonal oceanic heat transports computed from an atmospheric model.

Russell, G.L., et al, *Dynamics of atmospheres and oceans*, Aug. 1985, 9(3), p.253-271, 11 refs.

Miller, J.R., Tsang, L.-C.

Oceanography, Ice cover effect, Heat transfer, Atmo-spheric circulation, Thermodynamics, Models, Sea-sonal variations, Surface temperature, Heat flux.

40-2916

Modification of hydrographic characteristics, tides, and normal modes by ice cover.

Murty, T.S., *Marine geodesy*, 1985, 9(4), p.451-468, 14 refs.

Hydrography, Ice cover effect, Tides, Water waves, Coastal topographic features, Spectra.

40-2917

Freeze-thaw durability versus freezing rate. Pigeon, M., et al, *American Concrete Institute. Journal*, Sep.-Oct. 1985, No.5, p.684-692, 12 refs. Prévost, J., Simard, J.-M.

Concrete durability, Concrete freezing, Freeze thaw tests, Freezing rate, Air entrainment, Microstructure, Freeze thaw cycles.

40-2918

Further study of particulate admixtures for enhanced freeze-thaw resistance of concrete. Litvan, G.G., *American Concrete Institute. Journal*, Sep.-Oct. 1985, No.5, p.724-730, 7 refs.

Concrete durability, Freeze thaw tests, Concrete strength, Concrete admixtures, Compressive properties, Cement admixtures.

40-2919

Dependence of frost resistance on the pore structure of mortar containing silica fume.

Cheng-yi, H., et al, *American Concrete Institute. Journal*, Sep. Oct. 1985, No.5, p.740-743, 11 refs. Feldman, R.F.

Frost resistance, Concrete freezing, Mortars, Freeze thaw cycles, Frost action, Air entrainment.

40-2920

Two-dimensional hydrometeor machine classifier derived from observed data.

Hunter, H.E., et al, *Journal of atmospheric and oceanic technology*, Mar. 1984, 1(1), p.28-36, 14 refs. Dyer, R.M., Glass, M.

Microwaves, Ice crystal structure, Lasers, Particles, Supercooled clouds, Cloud physics, Remote sensing.

40-2921

Evaluation of a 35 GHz radar for cloud physics research.

Hobbs, P.V., et al, *Journal of atmospheric and oceanic technology*, Mar. 1985, 2(1), p.35-48, 18 refs. Cloud physics, Ice crystals, Radar echoes, Reflectivity, Supercooled clouds.

40-2922

Sea ice microbial communities in Antarctica.

Garrison, D.L., et al, *BioScience*, Apr. 1986, 36(4), MP 2026, p.243-250, 38 refs. Sullivan, C.W., Ackley, S.F.

Sea ice, Microbiology, Bacteria, Marine biology, Cryobiology, Antarctica—McMurdo Sound, Antarctica—Weddell Sea.

The role of sea ice community inhabitants as the sub-bottom element in the antarctic food web is reviewed. Sea ice formation is described and the several denizens of this habitat are identified. They serve as food for krill which have been found in brine channels in the ice of McMurdo Sound and the Weddell Sea. Their behaviors, geographic distributions, and populations in antarctic waters are the objects of continuing long term studies.

40-2923

Importance of ice edge phytoplankton production in the southern ocean.

Smith, W.O., Jr., et al, *BioScience*, Apr. 1986, 36(4), p.251-257, 35 refs. Nelson, D.M.

Biomass, Ice edge, Sea ice, Marine biology, Plankton, Antarctica—Weddell Sea, Antarctica—Ross Sea.

Prior studies indicate that the southern ocean as a whole is a region of low biological productivity which seems paradoxical since tremendous concentrations of krill have been reported and the stocks of whales, birds, and seals are extremely large. A possible explanation is that a large source of high productivity has been missed in previous investigations because production is spatially and temporally restricted. The marginal ice edge may be the area which can produce the biomass needed to sustain the large faunal populations which occur there. The ice edge zones of the Ross and Weddell Seas are compared and mechanisms favorable to population blooms are discussed. To gain insight into the potential impact of ice edge blooms on the entire southern ocean, their productivity is calculated relative to that of open water for a single location.

40-2924

Ice edges and seabird occurrence in Antarctica.

Fraser, W.R., et al, *BioScience*, Apr. 1986, 36(4), p.258-263, 36 refs. Ainley, D.G.

Sea ice, Ice edge, Marine biology, Animals.

Two assumptions are made and discussed regarding the presence of two bird species at the ice edge, one species being associated with pack ice and the other with open water north of the pack. It is assumed that the two species are organized into recognizable communities structured by the juxtapositioning of appropriate foraging and breeding habits. It is also assumed that seabird distribution within the broad limits of their oceanic habitats results from the active search for food. Two schools of thought focus on the question. Which set of factors exercises greater influence on bird populations to congregate at the ice edge zones: the physical cues or the biological cues?

40-2925

Antarctic automatic weather station data for the calendar year 1980.

Savage, M.L., et al, Madison, University of Wisconsin, 1985, 72p.

Stearns, C.R., Fleming, D. Weather observations, Weather stations, Climate, Remote sensing.

Automatic Weather Stations (AWS) provide surface weather observations at a number of locations in Antarctica. Data consist of air temperature, wind speed, and wind direction at approximately three meters above the surface. Data are telemeasured via polar-orbiting satellite to McMurdo and to New Zealand, Australia, and the United States. Data storage design and the geometry of the satellite orbit result in 50 minutes of data at ten minute intervals for each 100 minute orbit of the satellite, yielding between 70 and 144 observations per station per day depending on the number of operational satellites. Data have been selected at three-hourly intervals to produce a one page monthly summary for each station. Maximum and minimum values have been selected from the complete data set. It is likely that the AWS underestimate the true maximum winds due to discrete sampling. A station identification list and locator charts are included for the array of stations. In addition to the three-hourly data summaries, monthly climate summaries are given for five of the stations. (Auth.)

40-2926

Antarctic automatic weather station data for the calendar year 1981.

Savage, M.L., et al, Madison, University of Wisconsin, 1985, 149p.

Stearns, C.R., Fleming, D. Weather observations, Weather stations, Climate, Remote sensing.

Automatic Weather Stations (AWS) provide surface weather observations at a number of locations in Antarctica. Data consist of air temperature, wind speed, and wind direction at approximately three meters above the surface. Data are telemeasured via polar-orbiting satellite to McMurdo and to New Zealand, Australia, and the United States. Data storage design and the geometry of the satellite orbit result in 50 minutes of data at ten minute intervals for each 100 minute orbit of the satellite, yielding between 70 and 144 observations per station per day depending on the number of operational satellites. Data have been selected at three-hourly intervals to produce a one page monthly summary for each station. Maximum and minimum values have been selected from the complete data set. It is likely that the AWS underestimate the true maximum winds due to discrete sampling. A station identification list and locator charts are included for the array of stations. In addition to the three-hourly data summaries, monthly climate summaries are given for seven of the stations. Also included is Field report: Antarctic automatic weather stations, November-December 1980, by M.L. Savage, p.112-146. (Auth. mod.)

40-2927

Antarctic automatic weather station data for the calendar year 1982.

Savage, M.L., et al, Madison, University of Wisconsin, 1985, 185p.

Stearns, C.R., Fleming, D. Weather observations, Weather stations, Climate, Remote sensing.

Automatic Weather Stations (AWS) provide surface weather observations at a number of locations in Antarctica. Data consist of air temperature, wind speed, and wind direction at approximately three meters above the surface. Data are telemeasured via polar-orbiting satellite to McMurdo and to New Zealand, Australia, and the United States. Data storage design and the geometry of the satellite orbit result in 50 minutes of data at ten minute intervals for each 100 minute orbit of the satellite, yielding between 70 and 144 observations per station per day depending on the number of operational satellites. Data have been selected at three-hourly intervals to produce a one page monthly summary for each station. Maximum and minimum values have been selected from the complete data set. It is likely that the AWS underestimate the true maximum winds due to discrete sampling. A station identification list and locator charts are included for the station array. In addition to the three-hourly data summaries, monthly climate summaries are given for 12 stations. Also included is Field report: Antarctic automatic weather stations, November-December 1981, by M.L. Savage and C.R. Stearns, p.157-183. (Auth. mod.)

40-2928

Antarctic automatic weather station data for the calendar year 1983.

Savage, M.L., et al, Madison, University of Wisconsin, 1985, 192p.

Stearns, C.R., Weidner, G., Fleming, D. Weather observations, Weather stations, Climate, Remote sensing.

Automatic Weather Stations (AWS) provide surface weather observations at a number of locations in Antarctica. Data consist of air temperature, wind speed, and wind direction at approximately three meters above the surface. Data are telemeasured via polar-orbiting satellite to McMurdo and to New Zealand, Australia, and the United States. Data storage design and the geometry of the satellite orbit result in 50 minutes of data at ten minute intervals for each 100 minute orbit of the satellite, yielding between 70 and 144 observations per station per day depending on the number of operational satellites.

Data have been selected at three-hourly intervals to produce a one page monthly summary for each station. Maximum and minimum values have been selected from the complete data set. It is likely that the AWS underestimate the true maximum winds due to discrete sampling. A station identification list and locator charts for the array of stations are included. In addition to the three-hourly summaries, monthly climate summaries are given for 10 stations. Also included is: Antarctic automatic weather stations AS 82-83; Field report, McMurdo area Peninsula area deployment, by C.R. Stearns and G.W. Weidner, p.149-188. (Auth. mod.)

40-2929

Antarctic automatic weather station data for the calendar year 1984.

Savage, M.L., et al, Madison, University of Wisconsin, 1985, 244p.

Stearns, C.R., Weidner, G., Fleming, D. Weather observations, Weather stations, Climate, Remote sensing.

Automatic Weather Stations (AWS) provide surface weather observations at a number of locations in Antarctica. Data consist of air temperature, wind speed, and wind direction at approximately three meters above the surface. Data are telemeasured via polar-orbiting satellite to McMurdo and to New Zealand, Australia, and the United States. Data storage design and the geometry of the satellite orbit result in 50 minutes of data at ten minute intervals for each 100 minute orbit of the satellite, yielding between 70 and 144 observations per station per day depending on the number of operational satellites. Data have been selected at three-hourly intervals to produce a one page monthly summary for each station. Maximum and minimum values have been selected from the complete data set. It is likely that the AWS underestimate the true maximum winds due to discrete sampling. A station identification list and locator charts for the array of stations are included. In addition to the three-hourly data summaries, monthly climate summaries are given for fourteen stations. Also included is: Field report, antarctic automatic weather stations AS 1983/84, by C.R. Stearns, and G. Weidner, p.198-241. (Auth. mod.)

40-2930

Regional utilization of natural resources in Siberia; problems and prospects. [Regional'noe prirodopol'zovanie v Sibiri; problemy i perspektivy]. Ishmuratov, B.M., ed, Irkutsk, 1984, 196p., In Russian. For selected paper see 40-2931.

Mapping, Snow surveys, Snow water equivalent, Snow depth, Topographic effects, Snow cover distribution, Water reserves.

40-2931

Determining snow cover parameters in East Siberia and the Far East. [Opredelenie parametrov snezhnogo pokrova na territorii Vostochnof Sibiri i Dal'nego Vostoka].

Naprasnikov, A.T., et al, Regional'noe prirodopol'zovanie v Sibiri; problemy i perspektivy (Regional utilization of natural resources in Siberia; problems and prospects) edited by B.M. Ishmuratov, Irkutsk, 1985, p.159-186, In Russian. 6 refs. Kirichenko, A.V.

Maps, Snow surveys, Snow water equivalent, Snow cover distribution, Glaciology, Snow depth, Topographic effects, Climatology, Water reserves.

40-2932

Ecology of cooling ponds under polar conditions. [Ekologiya vodoemov-okhladitelei v usloviakh Zapol'ia].

Kriuchkov, V.V., et al, Apatity, 1985, 131p., In Russian with abridged English table of contents enclosed. Refs. p.122-130.

Moiseenko, T.I., Iakovlev, V.A. Water chemistry, Microbiology, Ecology, Algae, Cooling ponds, Electric power, Thermal regime, Thermal power plants, Nuclear power.

40-2933

Studies of tribotechnical systems under cold climatic conditions. [Issledovanie tribotekhnicheskikh sistem v usloviakh kholodnogo klimata].

Cherskii, I.N., ed, Yakutsk, Yakut. Filial SO AN SSSR, 1985, 113p., In Russian. For selected papers see 40-2934 and 40-2935. Refs. passim.

Machinery, Internal friction, Ice friction, Cold weather performance, Frost resistance.

40-2934

Development of a method for studying the performance of rubber sleeves at low temperature. [Razrabotka metoda issledovaniia rabotosposobnosti rezinovykh manzhet pri nizkikh temperaturakh].

Malanichev, V.I., et al, Issledovanie tribotekhnicheskikh sistem v usloviakh kholodnogo klimata (Studies of tribotechnical systems under cold climatic conditions) edited by I.N. Cherskii, Yakutsk, Yakut. Filial SO AN SSSR, 1985, p.65-72, In Russian. 7 refs. Morova, L.I.A., Fedorov, N.I., Filatova, V.I.A.

Rubber, Machinery, Cold weather performance, Frost resistance.

## 40-2935

**Strength of adhesion of materials to ice as a function of conditions of its formation.** [Vliianie uslovii formirovaniia na prochnost' adgezionnogo soedineniia materialov so l'dom]. Igoshin, V.A., et al. Issledovanie tribotekhnicheskikh sistem v usloviakh kholodnogo klimata (Studies of tribotechnical systems under cold climatic conditions) edited by I.N. Cherskii, Yakutsk, Yakut, Filial SO AN SSSR, 1985, p.85-89. In Russian. 12 refs. Postol, V.I.

**Machinery, Materials, Ice adhesion, Icing.**

## 40-2936

**Sand, airport snow and ice control.** Society of Automotive Engineers. Aerospace material specification, Oct. 1985, SAE AMS 1448, 4p.

**Ice control, Snow removal, Ice removal, Airports, Sanding, Road icing, Countermeasures.**

## 40-2937

## Abstracts.

Workshop on Cenozoic Geology of the Southern High Latitudes, Aug. 16-17, 1985, Columbus, Ohio State University, 1985, 37p.

Gondwana Symposium, 6th.

**Ice shelves, Geochronology, Paleoclimatology, Continental drift, Ice cores.**

The program of the Workshop included 8 sessions covering the following topics: Recent processes, Late Cretaceous-Early Cenozoic; Mid Cenozoic, Cenozoic, Late Cenozoic; and Synthesis and speculation. The program listing is followed by 35 abstracts of papers presented at the Workshop listed in alphabetical order by author, and falling into such categories as geochronology, paleontology, paleoclimatology, stratigraphy and continental drift.

## 40-2938

**Unique community of pioneer mosses dominated by *Pterygoneurum cf. Ovatum* in the Antarctic.** Smith, R.L.L., *Journal of bryology*, 1985, 13(4), p.509-514, 12 refs.

**Moraines, Mosses, Antarctica—Signy Island.**

During the course of an investigation of pioneer fellfield communities, an assemblage of colonizing mosses was found on a moraine system adjacent to Orwell Glacier in Moraine Valley, Signy I. This system comprises a series of lateral moraines created during two major ice advances. Since the early 1960s continual ice-recession has revealed a series of small, parallel moraines partly over-riding older ones. At least 5-6 m thickness of ice has melted from the lower part of the glacier during the past 20 yrs. The young moraines are now subject to erosion, particularly by heavy rain, which causes large mudflows which wash out the debris. This raw glacial till is mobile and barren. However, along much of the crest of the older and outer-most of the new moraines the fine till has consolidated and has a pH between 7.0 and 8.0; it is here, where it is not severely disrupted by cryoturbation, that the soil has been colonized by an unusual assemblage of calcicolous mosses, which is described and illustrated in this paper.

## 40-2939

**U.S. Army Test and Evaluation Command test operation procedure; cold regions environmental test of nuclear, biological, and chemical decontamination of equipment; Final report. U.S. Army Cold Regions Test Center. Report, May 1985, TOP 8-4-007, 43p., ADA-158 593, 6 refs.**

**Equipment, Cold weather operation, Decontamination.**

## 40-2940

**Extremal analysis of hindcast and measured wind and wave data at Kodiak, Alaska.**

Andrew, M.E., et al. *U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. Technical report*, June 1985, CERC-TR-85-4, 58p. + app., ADA-158 136, 19 refs.

Smith, O.P., McKee, J.M.

**Wind (meteorology), Ocean waves, Weather forecasting, United States—Alaska—Kodiak.**

## 40-2941

**Marine stratigraphy and amino-acid geochronology of the Gublik Formation, western Arctic Coastal Plain, Alaska.**

Brigham, J.K., *U.S. Geological Survey. Open-file Report*, 1985, No. 85-381, 218p. + plates.

**Stratigraphy, Geochronology, Permafrost distribution, United States—Alaska.**

## 40-2942

**Botanical investigations beyond the Arctic Circle.** [Botanicheskie issledovaniia za Poliarnym krugom]. Luk'ianova, L.M., ed. Apatity, 1985, 129p., In Russian. For selected articles see 40-2943 through 40-2947. Refs. passim.

**Arctic landscapes, Forest soils, Continuous permafrost, Active layer, Plant ecology, Biomass, Plant physiology.**

## 40-2943

**Parcellar structure of phytomass in the lower strata of secondary pine forests of the Kola Peninsula.** [Partsellarniaia struktura fitomassy nizhnikh iarusov vtorichnykh sosnovykh lesov Kol'skogo Poluostrova]. Nikonov, V.V., et al. *Botanicheskie issledovaniia za Poliarnym krugom* (Botanical investigations beyond the Arctic Circle) edited by L.M. Luk'ianova, Apatity, 1985, p.70-81. In Russian. 4 refs.

**Forest soils, Phytomass, Plant ecology, Plant physiology, Lichens, Polar regions.**

## 40-2944

**Resistance of forest *Myrtillus* shrubs to stresses of recreational activities.** [Ob ustoiichivosti lesnykh kustarnichkov Kol'skogo Severa k rekreatsionnoi nagruzke *Myrtillus*]. Kuz'mina, L.I., *Botanicheskie issledovaniia za Poliarnym krugom* (Botanical investigations beyond the Arctic Circle) edited by L.M. Luk'ianova, Apatity, 1985, p.88-93. In Russian. 3 refs.

**Active layer, Vegetation, Human factors, Arctic landscapes.**

## 40-2945

**Dependence of carbon dioxide exchange on the age of plant leaves.** [Zavisimost' CO<sub>2</sub>-gazoobmena rastenii ot vozrasta ikh list'ev]. Luk'ianova, L.M., et al. *Botanicheskie issledovaniia za Poliarnym krugom* (Botanical investigations beyond the Arctic Circle) edited by L.M. Luk'ianova, Apatity, 1985, p.93-98. In Russian. 4 refs.

**Plant physiology, Continuous permafrost, Active layer, Plant ecology, Polar regions, Photosynthesis, Carbon dioxide, Plant tissue.**

## 40-2946

**Seasonal dynamics of plant respiration in the Khibiny Mountains.** [Sezonnaia dinamika dykhatel'noi sposobnosti rastenii Khibiny]. Lokteva, T.N., *Botanicheskie issledovaniia za Poliarnym krugom* (Botanical investigations beyond the Arctic Circle) edited by L.M. Luk'ianova, Apatity, 1985, p.99-105. In Russian. 18 refs.

**Plant ecology, Plant physiology, Ecosystems, Alpine landscapes, Arctic landscapes.**

## 40-2947

**Methods of vegetational multiplication of the Ethiopian Kalla under polar conditions.** [Sposoby vegetativnogo razmnozheniia Kally Efiopskoj v usloviakh Zapoliariia]. Ivanova, L.A., *Botanicheskie issledovaniia za Poliarnym krugom* (Botanical investigations beyond the Arctic Circle) edited by L.M. Luk'ianova, Apatity, 1985, p.109-115. In Russian. 8 refs.

**Continuous permafrost, Grasses, Introduced plants, Polar regions.**

## 40-2948

**Prediction of ice formation on roads.** Thorne, J.E., *Highways and transportation*, Aug.-Sep. 1985, 32(8), p.3-12, 6 refs.

**Road icing, Warning systems, Ice forecasting, Winter maintenance, Road maintenance, Weather forecasting.**

## 40-2949

**Highlights from recent Beaufort Sea sedimentologic investigations.** Reimnitz, E., et al. *U.S. Geological Survey. Open-file Report*, 1985, 85-502, 13p., 24 refs.

**Sedimentation, Ocean bottom, Ice scoring, Bottom sediment, Sea ice distribution, Ocean currents, Beaufort Sea.**

## 40-2950

**Economics of ground freezing for management of uncontrolled hazardous waste sites.** Sullivan, J.M., Jr., et al. *MP 2030*, 1985, 15p., National Conference on Management of Uncontrolled Hazardous Waste Sites, 5th, Washington, D.C., Nov 7-9, 1984. Proceedings. 26 refs.

**Waste treatment, Soil freezing, Artificial freezing, Waste disposal, Soil water, Thermal properties, Latent heat, Environment protection, Refrigeration.**

Ground freezing for hazardous waste containment is an alternative to the traditional and expensive slurry wall or grout curtain barrier technologies. The parameters quantified in this analysis of it include thermal properties, refrigeration line spacing, equipment mobilization and freezing time constraints. The economics of the process is discussed based on the Poetsch method for ground freezing. Vertical drill holes with concentric refrigeration lines are spaced along the desired freezing line. A header or manifold system provides coolant to an interior pipe, with the return line being the outer casing. A self-con-

tained refrigeration system pumps coolant around the freezing loop. Temperature-measuring instrumentation is appropriately placed to monitor the progress of the freeze front.

## 40-2951

**Potential use of artificial ground freezing for contaminant immobilization.**

Iskandar, I.K., et al. *MP 2029*, 1985, 10p., Reprinted from International Conference on New Frontiers for Hazardous Waste Management, Pittsburgh, PA, Sep. 15-18, 1985. Proceedings. 14 refs.

**Waste treatment, Artificial freezing, Soil freezing, Freeze thaw cycles, Soil pollution, Countermeasures, Waste disposal, Environmental protection.**

This paper summarizes a preliminary investigation of the potential use of ground freezing technology for contaminant immobilization. Freezing and thawing were found to significantly decrease the volume of soil slurry and increase the permeability of soils. Frozen metal-contaminated soils eliminated metal leaching to groundwater under the site. Freezing and thawing soils contaminated with moderately volatile organics significantly reduced the soil concentrations of these organics. Freezing the soil from the bottom apparently enhanced upward movement of the organics to the soil surface where losses occurred by volatilization. The amount lost depended on the mobility of the specific volatile component and was as high as 90% for chloroform, benzene and toluene and as low as 45% for tetrachloroethylene. Input to groundwater during freezing and thawing of these organics was much less than the unfrozen (control) treatment. Artificial ground freezing for decontamination of soils and for immobilization of contaminants is now being tested on a larger scale.

## 40-2952

**Effect of freezing on the level of contaminants in uncontrolled hazardous waste sites. Part 1. Literature review and concepts.**

Iskandar, I.K., et al. *MP 2028*, Annual Research Symposium on Land Disposal of Hazardous Waste, 11th, Cincinnati, Ohio, Apr. 29-May 1, 1985. Proceedings, Cincinnati, OH, U.S. Environmental Protection Agency, 1985, p.122-129, 21 refs.

**Waste treatment, Waste disposal, Soil freezing, Artificial freezing, Ion diffusion, Frost action, Sludges, Countermeasures, Soil pollution, Environmental protection.**

A literature search indicated that natural freezing may have detrimental effects at uncontrolled hazardous waste sites in the cold-dominated areas because of frost action on buried materials and ion movement in soils. Natural and artificial freezing, however, can be used beneficially to concentrate effluents, and to dewater sludges, contaminated sediment and soils. The process of artificial ground freezing can also be used as an alternative to temporarily immobilize contaminant transport and potentially for decontamination of soils, sediments and sludges. A cost and economic analysis procedure was developed and used to evaluate ground freezing.

## 40-2953

**Water resources and hydrologic hazards of the Exit Glacier area near Seward, Alaska.**

Sloan, C.E., *U.S. Geological Survey. Water-resources investigation report*, 1985, 85-4247, 8p., 1 ref. **Glacial hydrology, Runoff, Water reserves, Soil water, Glacier oscillation, Glacial deposits, Avalanche formation, Floods, Photographic reconnaissance, United States—Alaska—Exit Glacier.**

**Field test evaluation of an inhibited deicing salt.**

Jameston, R.A., et al. *Society of Automotive Engineers. Mid-year meeting, Detroit, MI, May 20-24, 1968*, 1968, No.680441, 9p., 4 refs.

**Salting, Vehicles, Corrosion, Chemical ice prevention, Road icing, Steel structures, Metals, Protective coatings, Tests.**

**Inhibited deicing salt and stainless steel automotive trim.**

Zaremski, D.R., *Society of Automotive Engineers. Mid-year meeting, Detroit, MI, May 20-24, 1968*, 1968, No.680442, 19p., 3 refs.

**Corrosion, Steel structures, Salting, Chemical ice prevention, Vehicles, Countermeasures.**

## 40-2956

**Geodetic work on the Filchner-Ronne and Ekström Ice Shelves 1979-1982.** [Geodätische Arbeiten auf den Filchner-Ronne- und Ekström-Schelfeisen 1979 bis 1982]. Lindner, K., et al. *Polarforschung*, 1985, 55(1), p.1-26. In German with English summary and figure captions. 27 refs.

**Ritter, B.**

**Geodetic surveys, Ice mechanics, Strains, Ice creep, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf, Antarctica—Ekström Ice Shelf.**

The determination of the strain and velocity behaviour of the ice surface near the two German antarctic stations on Fil-

hner/Ronne and Ekström ice shelves was performed by the use of various geodetic measuring techniques. The relative positions and heights of control points valid for reference data were deduced from terrestrial observations. After a second sampling of data, these values served as the basis for the deformation analyses. Doppler-satellite observations made absolute positioning of special points possible. These Doppler observations, supported by azimuth measurements, provided the datum of control network. After repetition of these observations, the drift rates and azimuths of the control points as well as the rotation rates of the surface elements could be given. From vertical angles and horizontal distances, differences in height and refraction coefficients were calculated. On days without clouds the refraction coefficients increased by amounts of up to 3.0. Distances over 1 km have to be subdivided to reach a standard deviation level of height difference better than 0.05 m. In order to determine the heterogeneity of refraction, some height differences should be measured with higher accuracy and by subdivision of distances. (Auth.)

#### 40-2957

##### Roughness length of an antarctic ice shelf.

König, G., *Polarforschung*, 1985, 55(1), p.27-32, In English with German summary. 9 refs.

Ice shelves, Surface roughness, Wind velocity, Antarctica—Georg von Neumayer Station, Antarctica—Ekström Ice Shelf.

From 1888 wind profiles, measured in 1982 under neutral conditions on a 15 meter mast near the German Antarctic research station Georg von Neumayer, the roughness length of the Ekström Ice Shelf is calculated. The roughness length shows a dependence on wind velocity which is strongly correlated with snow drift. The remarkable increase of roughness length with decreasing wind as mentioned by earlier authors for the low wind regime, was not observed, but between 20 and 30 m/s, roughness length increases rapidly with increasing wind. The Charnock relation, which generally characterizes the increase of the roughness length with increasing wind speed above the sea surface well, is in a qualified sense also valid for conditions over the Ekström Ice Shelf. (Auth.)

#### 40-2958

German automatic weather stations in the Arctic 1942-1945. (Deutsche automatische Wetterstationen in der Arktis 1942-1945).

Selinger, F., *Polarforschung*, 1985, 55(1), p.55-67, In German with English summary. 16 refs.

Weather stations, Military equipment, Measuring instruments, Remote sensing.

#### 40-2959

Natural protection of ground waters in cryo-hydrogeological structures. (Estestvennaia zashchishchennost' podzemnykh vod v kriogidrogeologicheskikh strukturakh). Romanovskii, N.N., et al. Yakutsk, 1985, 118p., In Russian with English table of contents enclosed. Refs. p.113-116.

Afanasenkov, V.E., Volkova, V.P.

Permafrost hydrology, Environmental protection, Water pollution, Permafrost structure, Suprapermafrost ground water, Subpermafrost ground water.

#### 40-2960

Geographic analysis of natural resources of the Irkutsk region. (Geograficheskii analiz prirodnykh resursov Irkutskoi oblasti). Antipov, A.N., ed. Irkutsk, 1985, 174p., In Russian. For selected papers see 40-2961 through 40-2963. Refs. passim.

Water reserves, Ice (water storage), Naleds, Glacial hydrology, Icebound lakes, Polynyas, Evaporation.

#### 40-2961

Natural and potential naled resources in the Irkutsk region. (Estestvennye i potentsial'nye nalednye resursy Irkutskoi oblasti). Petukhova, N.A., Geograficheskii analiz prirodnykh resursov Irkutskoi oblasti (Geographic analysis of natural resources of the Irkutsk region) edited by A.N. Antipov, Irkutsk, 1985, p.6-21, In Russian. 25 refs. Ice (water storage), Ice (construction material), Ice crossings, Artificial ice, Water reserves.

#### 40-2962

Regional evaluation of surface evaporation from small water bodies in southern Siberia. (Regional'naia otsenka resursov ispareniia s poverkhnosti mal'kh vodoemov iuga Vostochnoi Sibiri). Aseev, V.V., Geograficheskii analiz prirodnykh resursov Irkutskoi oblasti (Geographic analysis of natural resources of the Irkutsk region) edited by A.N. Antipov, Irkutsk, 1985, p.22-39, In Russian. 10 refs. Evaporation, Surface waters, Ice surface, Polynyas, Snow evaporation, Charts.

#### 40-2963

##### Lake-burst floods in the Baykal area mountains.

(Proryvnye pavodki v gorakh Pribalkal'ia). Drobot, V.V., Geograficheskii analiz prirodnykh resursov Irkutskoi oblasti (Geographic analysis of natural resources of the Irkutsk region) edited by A.N. Antipov, Irkutsk, 1985, p.40-51, In Russian. 28 refs. Floods, River basins, Valleys, Moraines, Mudflows, Dams, Lakes.

#### 40-2964

Landscape-ecological studies and the use of natural resources. (Landschaftno-ekologicheskie issledovaniia i prirodopol'zovanie). Chupakhin, V.M., ed. Moscow, 1985, 146p., In Russian. For selected papers see 40-2965 and 40-2966. Refs. passim.

Landscape development, Ecology, Land reclamation, Spaceborne photography, Geobotanical interpretation.

#### 40-2965

Landscape-ecological method of using satellite photographs in studying soil covers. (Landschaftno-ekologicheskii metod izucheniia pochvennogo pokrova s primeneniem kosmicheskikh snimkov). Mikhailov, I.S., Landschaftno-ekologicheskie issledovaniia i prirodopol'zovanie (Landscape-ecological studies and the use of natural resources) edited by V.M. Chupakhin, Moscow, 1985, p.73-81, In Russian. Spaceborne photography, Photointerpretation, Geobotanical interpretation, Soil mapping, Cryogenic soils, Alpine tundra, Taiga, Forest tundra, Meadow soils.

#### 40-2966

Landscape-ecologic approach to compiling medium-scale soil maps from space photographs. (Landschaftno-ekologicheskii podkhod pri sozdaniia srednemashtabnykh pochvennykh kart s primeneniem kosmicheskikh fotosnimkov).

Mikhailov, I.S., et al., Landschaftno-ekologicheskie issledovaniia i prirodopol'zovanie (Landscape-ecological studies and the use of natural resources) edited by V.M. Chupakhin, Moscow, 1985, p.92-103, In Russian.

Novozhilova, V.V.

Spaceborne photography, Photointerpretation, Geobotanical interpretation, Soil mapping, Forest land, Plains, Swamps.

#### 40-2967

Methods of studying the efficiency of generators for ice-forming aerosols in two-phase streams. (Metodika issledovaniia effektivnosti del'stviia generatorov l'dobrazuiushchikh aerolei v dvukhfaznom potoke). Kim, N.S., et al., *Leningrad. Institut eksperimental'noi meteorologii. Trudy*, 1985, Vol.9, p.19-25, In Russian. 2 refs. Chikhabakh, B.K. Smoke generators, Aerosols, Supercooling, Wind tunnels, Naleds.

#### 40-2968

Direct evidence for antifreeze glycoprotein adsorption onto an ice surface.

Brown, R.A., et al., *Biopolymers*, July 1985, 24(7), p.1265-1270, 15 refs.

Yeh, Y., Burcham, T.S., Feeney, R.E.

Cryobiology, Ice water interface, Ice crystals. Certain fish native to subzero Arctic and Antarctic waters do not freeze even when in contact with ice. Glycoproteins that have the effect of lowering the freezing temperature of a water solution have been isolated from these fish, e.g., *Pagotenia borchgrevinki*, and are known as antifreeze glycoproteins (AFGP). Similar substances have been isolated from the sera of other cold-water fish. Aqueous solutions of AFGP exhibit hysteresis between the freezing and melting temperatures. In the present study, enhanced surface second-harmonic generation (SSHG) was observed in the presence of an active AFGP solution in contact with a pure single crystal of ice. The enhancement of SSHG is a positive indication that active AFGP molecules adsorb to the surface of ice crystals. (Auth. mod.)

#### 40-2969

Evidence of changing concentrations of atmospheric CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> from air bubbles in antarctic ice. Pearmar, G.I., et al., *Nature*, Mar. 26, 1986, 320(6059), p.248-250, 21 refs.

Etheridge, D., De Silva, F., Fraser, P.J.

Bubbles, Ice cores, Ice composition, Carbon dioxide, Air pollution, Antarctica—Law Dome.

Atmospheric carbon dioxide (CO<sub>2</sub>) levels during the seventeenth and eighteenth centuries were determined from studies of air trapped in ice at the Law Dome. The data show an average concentration of 281 p.p.m.v. Measurements of two other greenhouse gases, methane CH<sub>4</sub> and nitrous oxide N<sub>2</sub>O, show increases of about 90 and 8% respectively since 1600. This CH<sub>4</sub> increase is similar to the recently reported doubling over the same period, and the N<sub>2</sub>O increase, the first direct evidence

of historical changes in N<sub>2</sub>O, is consistent with releases due to expanding anthropogenic combustion processes. (Auth. mod.)

#### 40-2970

Effect of the marginal ice zone on the directional wave spectrum of the ocean.

Wadhams, P., et al., *Journal of physical oceanography*, Feb. 1986, 16(2), p.358-376, 24 refs.

Squire, V.A., Ewing, J.A., Pascal, R.W.

Sea ice, Ice edge, Ocean waves, Attenuation, Greenland.

#### 40-2971

Investigations, calculations and forecasting of ice phenomena on rivers and lakes. (Issledovaniia, raschety i prognozy ledovykh iavlenii na rekakh i vodokhranilishchakh). Donchenko, R.V., ed. Leningrad. Gosudarstvennyi gidrologicheskii institut. *Trudy*, 1985, Vol.309, 88p., In Russian. For individual papers see 40-2972 through 40-2980. Refs. passim.

Chizhov, A.N., ed.

Icebound rivers, Hydraulic structures, Shores, Icebound lakes, Ice breakup, Ice jams, Ice cover thickness, Slush, Ice loads, Water level, Floods, Ice cover strength, Bearing strength.

#### 40-2972

Regularities governing the formation and distribution of ice jams on rivers in the USSR. (Zakonomernosti obrazovaniia i rasprostraneniia zazorov na rekakh SSSR).

Donchenko, R.V., et al., Leningrad. Gosudarstvennyi gidrologicheskii institut. *Trudy*, 1985, Vol.309, p.3-15, In Russian. 11 refs.

S'hegoleva, E.V.

Icebound rivers, Ice formation, Ice breakup, Ice jams.

#### 40-2973

Regularities of spatial distribution of ice cover thickness on rivers, lakes and reservoirs. (Zakonomernosti prostranstvennogo raspredeleniia tolshchiny ledianogo pokrova rek, ozer i vodokhranilishch). Chizhov, A.N., Leningrad. Gosudarstvennyi gidrologicheskii institut. *Trudy*, 1985, Vol.309, p.15-23, In Russian. 7 refs.

Radar echoes, Ice cover thickness, Ice accretion, Icebound rivers, Icebound lakes, Ice bottom surface.

#### 40-2974

Bearing capacity of ice covers. (O nesushchei sposobnosti ledianogo pokrova). Kozitskii, I.E., Leningrad. Gosudarstvennyi gidrologicheskii institut. *Trudy*, 1985, Vol.309, p.24-33, In Russian. 16 refs. Ice cover strength, Icebound rivers, Bearing strength, Stresses, Icebound lakes, Static loads.

#### 40-2975

Scheme for calculating the magnitude of ice pressure against shore slopes. (Skhema rascheta razmerov navala l'da na beregovoi otkos). Kozitskii, I.E., Leningrad. Gosudarstvennyi gidrologicheskii institut. *Trudy*, 1985, Vol.309, p.33-37, In Russian. 4 refs.

River ice, Fast ice, Ice volume, Ice loads.

#### 40-2976

Semi-empirical model of jam formation processes. (Poluempiricheskaia model' protsessa formirovaniia zatorov). Bolotnikov, G.I., Leningrad. Gosudarstvennyi gidrologicheskii institut. *Trudy*, 1985, Vol.309, p.37-44, In Russian. 5 refs.

Icebound rivers, Ice breakup, Ice jams, Mathematical models.

#### 40-2977

Forecasting maximum ice jam water levels for the Amur and Ussuri rivers. (Prognozy maksimal'nykh zatornykh urovnei vody rek Amura i Ussuri). Buzin, V.A., et al., Leningrad. Gosudarstvennyi gidrologicheskii institut. *Trudy*, 1985, Vol.309, p.44-52, In Russian. 2 refs.

Shanochkin, S.V.

River ice, Water level, Floods, Ice breakup, Slush, Forecasting.

#### 40-2978

Influence of ice runoff from tributaries on ice-jam formation in the Lena and Amur rivers. (Vliianie stoka l'da pritokov na formirovanie zatorov na rekakh Lene i Amure). Alekseenko, R.I.A., Leningrad. Gosudarstvennyi gidrologicheskii institut. *Trudy*, 1985, Vol.309, p.52-58, In Russian.

River ice, Ice breakup, Ice jams, Ice volume.

40-2979

Laboratory studies of water passing capacities of riverbeds covered with ice and slush. [Laboratornye issledovaniia propusknoi sposobnosti rusel, pokrytykh l'dom i shugol']. Kiselev, A.A., Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy, 1985, Vol.309, p.58-65, In Russian. 2 refs.  
River ice, Ice passing, Stream flow, Ice floes, Slush, Friction.

40-2980

Observing the winter regime elements of rivers in eastern Siberia and the Far East. [Voprosy nabliudenii za elementami zimnego rezhima rek Vostochnoi Sibiri i Dal'nego Vostoka]. Chizhov, A.N., et al, Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy, 1985, Vol.309, p.66-76, In Russian. 5 refs.  
Icebound rivers, Subglacial drainage, Subglacial observations, Water level, Ice bottom surface, Ice accretion.

40-2981

Study and preservation of vegetation in the North. [Izuchenie i okhrana rastitel'nosti Severa]. Chertovskoi, V.G., ed, Syktyvkar, 1984, 144p., In Russian. For selected papers see 40-2982 through 40-2987. Refs. passim.  
Forest soils, Environmental protection, Landscape types, Spaceborne photography, Geobotanical interpretation, Polar regions, Plant ecology, Ecosystems, Taiga, Paludification.

40-2982

Larch (*Larix Sibirica*) in sparse forests of the Polar Ural Mountains. [Listvennichnye (*Larix sibirica*) redkoles'ia Pripoliarnogo Urala]. Nepomilueva, N.I., Izuchenie i okhrana rastitel'nosti Severa (Study and preservation of vegetation in the North) edited by V.G. Chertovskoi, Syktyvkar, 1984, p.51-68, In Russian. 6 refs.  
Forest soils, Plant ecology, Cryogenic soils, Plant physiology, Ecosystems, Polar regions, Lichens, Alpine landscapes, Mosses.

40-2983

Some bio-ecological peculiarities of pines in the Far North. [Nekotorye biologiko-ekologicheskie osobennosti sosny Krai'nego Severa]. Semenov, B.A., Izuchenie i okhrana rastitel'nosti Severa (Study and preservation of vegetation in the North) edited by V.G. Chertovskoi, Syktyvkar, 1984, p.69-75, In Russian. 16 refs.  
Vegetation, Forest soils, Plant ecology, Plant physiology, Polar regions, Cryogenic soils, Patterned ground.

40-2984

Regularities governing the growth of pine trees on Kola Peninsula. [Zakonomenosti rosta sosny na Kol'skom Poluostrove]. Tsvetkov, V.F., Izuchenie i okhrana rastitel'nosti Severa (Study and preservation of vegetation in the North) edited by V.G. Chertovskoi, Syktyvkar, 1984, p.76-85, In Russian. 23 refs.  
Forestry, Taiga, Revegetation, Cryogenic soils, Plant ecology, Plant physiology.

40-2985

Influence of microclimatic conditions on the beginning of the blossoming phase in paluded northern taiga. [Vlianie mikroklimatecheskikh uslovii na nastuplenie fazy tsveteniia rastenii v severotaezhnykh zabolochennykh lesakh]. Izotov, V.F., Izuchenie i okhrana rastitel'nosti Severa (Study and preservation of vegetation in the North) edited by V.G. Chertovskoi, Syktyvkar, 1984, p.86-89, In Russian. 4 refs.  
Paludification, Continuous permafrost, Active layer, Phenology, Plant physiology, Taiga.

40-2986

Changes in specific composition and abundance of moss-lichen covers in relation to forest fires in pine forests of the North. [Izmenenie vidovogo sostava i zapasa mshkovo-lisheynikovogo pokrova v svyazi s pozharami v sosniakakh Severa]. Zvonkova, A.A., Izuchenie i okhrana rastitel'nosti Severa (Study and preservation of vegetation in the North) edited by V.G. Chertovskoi, Syktyvkar, 1984, p.96-101, In Russian. 5 refs.  
Mosses, Lichens, Plant ecology, Ecosystems, Forest fires, Revegetation, Taiga.

40-2987

Vegetation as an indicator of soils, of soil-forming rocks and its interpretation on satellite photographs. [Rastitel'nost' kak indikator pochvy, pochvoobrazuiushchikh porod i ikh deshifirovanie po aerofotokam]. Bostrem, V.G., Izuchenie i okhrana rastitel'nosti Severa (Study and preservation of vegetation in the North) edited by V.G. Chertovskoi, Syktyvkar, 1984, p.102-107, In Russian. 7 refs.  
Taiga, Spaceborne photography, Paludification, Geobotanical interpretation, Swamps.

40-2988

Temperature gradient snow metamorphosis. Ratkje, S.K., Polar research, Dec. 1985, 3(2), p.141-143, 9 refs.

Ice crystal growth, Metamorphism (snow), Temperature gradients, Heat transfer, Mass transfer, Analysis (mathematics).

40-2989

Large-scale karst features and open taliks at Vardeborgsletta, outer Isfjorden, Svalbard. Salvigsen, O., et al, Polar research, Dec. 1985, 3(2), p.145-153, 23 refs.

Elgersma, A.  
Karst, Thermokarst, Ground water, Permafrost, Taliks.

40-2990

Hydrographic observations from the Weddell Sea during the Norwegian Antarctic Research Expedition 1976/77.

Foldvik, A., et al, Polar research, Dec. 1985, 3(2), p.177-193, 23 refs.

Gammelsrød, T., Törresen, T.  
Sea water, Ice shelves, Hydrography, Heat transfer, Polynyas, Antarctica—Weddell Sea, Antarctica—Filchner Ice Shelf.

CTD observations from the southern Weddell Sea in 1977 show that Ice Shelf Water originating under the floating Filchner Ice Shelf overflows at the sill of the Filchner Depression and can be identified on the continental slope at more than 2000 m depth. Intrusions of Weddell Deep Water under the shelf are especially noticeable in the region of dense shelf water outflow and are possibly driven by the outflow. Anomalous low core temperature of Weddell Deep Water is probably related to winter convection in the Weddell Polynya. Anomalous CTD stations at the periphery of the 1976 winter polynya region indicate that deep convection phenomena are perhaps quite common. The observations indicate that double diffusive convection is important for vertical heat transport in the central Weddell Sea. (Auth.)

40-2991

Physical oceanography studies in the Weddell Sea during the Norwegian Antarctic Research Expedition, 1978/79.

Foldvik, A., et al, Polar research, Dec. 1985, 3(2), p.195-207, 12 refs.

Gammelsrød, T., Törresen, T.  
Expeditions, Hydrography, Sea water, Sea ice, Ice shelves, Ocean currents, Antarctica—Weddell Sea.

Hydrographic and current measurements are presented. Cold, dense Ice Shelf Water circulating under the floating ice shelves is observed to leave the shelf as a concentrated bottom flow. From moored current meters this discharge is estimated at 700,000 cu m/s at  $-2.0^{\circ}\text{C}$  and with no appreciable seasonal variation. This contribution to the Weddell Sea Bottom Water is clearly identified through extreme temperature gradients at our deepest stations. The core of Weddell Deep Water shows a considerable warming up since 1977, presumably due to the lack of polynya activity in the intervening period. Measurements in the coastal current at the ice shelf ( $70^{\circ}\text{S}$ ,  $2^{\circ}\text{W}$ ) show step structures which are probably due to cooling and melting at the vertical ice barrier. Slight supercooling due to circulation under the ice shelf is also seen. The net effect of the ice shelf boundary seems to be a deep reaching cooling and freshening of the coastal current providing the low salinity, freezing point Eastern Shelf Water. This process is considered a preconditioning which enhances production of the saline Western Shelf Water which in turn is transformed to Ice Shelf Water.

40-2992

Oceanographic conditions on the Weddell Sea shelf during the German Antarctic Expedition 1979/80.

Foldvik, A., et al, Polar research, Dec. 1985, 3(2), p.209-226, 20 refs.

Gammelsrød, T., Slotsvik, N., Törresen, T.

Expeditions, Ice shelves, Hydrography, Ocean currents, Tidal currents, Sea water, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf.

Hydrographic (CTD), current, and water level measurements obtained in the vicinity of the floating Ronne and Filchner Ice Shelves are presented. The distribution of Western Shelf Water and Ice Shelf Water are discussed. The general circulation in the area seems to consist of two large cyclonic gyres, one in the Filchner Depression and one north of the Ronne Ice Shelf. Each gyre shows a "warm" southgoing flow of Modified Weddell Deep Water and a cold northward flow of Ice Shelf Water. The mean surface current was found to be  $8\text{ cm/s}$  towards the north west along the barrier. The mean flow below

the ice shelf shows significant components normal to the barrier, and mixing seems to be very efficient here. Well mixed layers down to more than 150 m were observed. North of Berkner Island the water level shows a typical mixed tide with tidal range approx 3 m. In the tidal currents the semidiurnal constituents dominate and with the largest current components normal to the barrier. (Auth.)

40-2993

Hydrographic conditions in the Fram Strait, summer 1982.

Farrelly, B., et al, Polar research, Dec. 1985, 3(2), p.227-238, 11 refs.

Gammelsrød, T., Golmen, L.G., Sjöberg, B.  
Hydrography, Sea water, Salinity, Temperature gradients, Sea ice, Ice edge, Fram Strait.

40-2994

Tundra degradation in the vicinity of the Polish polar station, Hornsund, Svalbard.

Krzyszowska, A.J., Polar research, Dec. 1985, 3(2), p.247-252, 36 refs.

Tundra, Environmental impact, Soil pollution, Stations, Norway—Svalbard.

40-2995

Hydraulic based sampling equipment for under-ice fauna.

Aarset, A.V., et al, Polar research, Dec. 1985, 3(2), p.253-255, 7 refs.

Willumsen, F.V.  
Equipment, Marine biology, Sea ice, Cryobiology.

40-2996

Topical databases: Cold Regions Technology on-line.

Liston, N., et al, Chemical engineering progress, Jan. 1986, MP 2027, p.12-15. Also presented at the Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings.

Winiarski, M.E.

Ice surveys, Computer applications, Snow surveys, Offshore structures, Offshore drilling, Bibliographies, Permafrost, Organizations, Engineering.

40-2997

Reply to comments on "Does the strength of ice depend on grain size at high temperature?"

Sinha, N.K., Scripta metallurgica, Dec. 1984, 18(12), p.1441-1442. For original paper see 38-2106, for comments by E.M. Schulson, 39-1647. 7 refs.

Ice strength, Grain size, Temperature effects, Ice structure, Impurities, Ice crystal structure, Tensile properties, Strains.

40-2998

Cold regions air pollution bibliography and summary.

Weller, G.E., et al, U.S. Environmental Protection Agency. (Report), Oct. 1984, EPA-600/3-84-98, 91p. PB85-121093.

Air pollution, Ice fog, Bibliographies, Haze, Human factors, Rain, Chemical analysis.

40-2999

Climate, pollution and ice.

Wolff, E., Natural Environment Research Council (Great Britain). NERC newjournal, Mar. 1986, 3(9), p.4-7.

Ice cores, Atmospheric composition, Climate, Metals, Impurities.

The climate and atmospheric pollution records established in polar ice are described and compared with recent data. Analyses of the numerous cores taken from various antarctic locations provide a useful and usable picture of changes which have occurred over the last few centuries.

40-3000

Construction in Antarctica.

McEwan, R.A., 1984, 6p., Unidentified reprint. 3 refs.

Cold weather construction, Buildings, Foundations, Wind pressure, Concrete, Antarctica—Casey Station, Antarctica—Davis Station.

The three permanent Australian stations at Casey, Davis and Mawson are located on coastal ice free rocky outcrops. Since the establishment of Mawson Station in 1954 the buildings have generally been small panel structures with external guys. In 1981 the Australian Government approved the commencement of a 10 year Rebuilding Program at a cost of \$A58m to redevelop the three rapidly deteriorating stations. The paper discusses the Rebuilding Program with particular emphasis on the structural design philosophy and solutions adopted for foundations (fine ground anchors), concrete (insitu and precast), the structural framing and cladding system. The results of the testing and development program both in mainland Australia and on site are examined. The structural engineering and construction problems unique to the antarctic region are reviewed. (Auth.)

40-3001

**Proceedings.**

Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985, [1985], var.p., Refs. passim. Microfiche only. For selected papers see 40-3002 through 40-3025.  
Offshore structures, Offshore drilling, Ice loads, Ice conditions, Air cushion vehicles, Meetings, Marine transportation, Sea ice.

40-3002

**Introduction of the air cushion vehicle to the North American Arctic.**

Wainwright, J., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 3p.  
Makinen, E.  
Air cushion vehicles, Transportation, Polar regions.

40-3003

**Beaufort Sea—an operating challenge.**

Mitton, F.E., Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 12p. + figs.  
Offshore drilling, Ice conditions, Ice loads, Offshore structures, Oil wells, Exploration, Beaufort Sea.

40-3004

**Use of traditional structures for drilling in marginal ice areas.**

Bruce, J.C., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 8p. + figs.  
Charpentier, K.J.  
Offshore structures, Ice conditions, Ice loads, Ice jams, Ice edge, Impact strength, Dynamic loads, Design, Bering Sea.

40-3005

**AMOCO production company, Navarin Basin, Bering Sea, Alaska—1985 Exploration Drilling Project, planning and logistics.**

Zaremba, H.B., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 14p.  
Millheim, K.K.  
Offshore drilling, Ice conditions, Exploration, Logistics, Sea ice.

40-3006

**Evolution of CANMAR's third generation Arctic drilling platform.**

Johansson, B., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 18p. + figs., 8 refs.  
Skjolingstad, L., Fitzpatrick, J., Hewitt, K.  
Offshore structures, Offshore drilling, Ice conditions, Ice loads, Artificial islands, Caissons, Design, Foundations, Steel structures.

40-3007

**Drilling fluids management in the Canadian Beaufort Sea.**

Earl, G.O., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 9p. + figs.  
Fedirko, L.J.  
Drilling fluids, Offshore drilling, Ice loads, Ocean bottom, Marine geology, Particle size distribution, Density (mass/volume), Pressure ridges, Beaufort Sea.

40-3008

**CIDS update: the Beaufort Sea experience.**

Bolding, V.E., Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 17p.  
Offshore drilling, Caissons, Ice loads, Design, Ice accretion, Snow accumulation, Soil strength, Ocean bottom, Beaufort Sea.

40-3009

**Monte Carlo simulation of Arctic offshore drilling operations.**

Bercha, F.G., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 33p., 7 refs.  
Brown, T.G.  
Offshore drilling, Offshore structures, Ice loads, Ice conditions, Models, Icebergs, Icebreakers, Meteorological factors, Computer programs, Floating structures.

40-3010

**Jack-down Arctic monopod—an exploration and development drilling platform for the deep Beaufort Sea.**

Shive, A.R., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 14p. + figs., 3 refs.  
Sedillot, F., Monier, R., Holy, T.A.  
Offshore drilling, Offshore structures, Construction materials, Exploration, Design criteria, Beaufort Sea.

40-3011

**Ice loads on bottom founded MODU's for operation in the Beaufort Sea.**

Churcher, A., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 43p., 19 refs.  
Ice loads, Offshore structures, Foundations, Ice solid interface, Ice conditions, Wind factors, Ocean waves, Design criteria, Countermeasures, Remote sensing.

40-3012

**Production scenarios for the Navarin Basin.**

Wang, F.S., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 8p. + figs., 4 refs.  
Bruce, J.C., Charpentier, K.J.  
Ice loads, Offshore structures, Ice conditions, Countermeasures.

40-3013

**Arctic transportation: an overview.**

Potter, R.E., Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 18p., 11 refs.  
Marine transportation, Ice conditions, Icebreakers, Offshore structures, Offshore drilling, Sea ice, Ocean waves, Exploration, Air cushion vehicles, Seasonal variations, Beaufort Sea.

40-3014

**Field and model test for predicting the ice resistance of the ARCO Arctic tanker.**

Sucharski, D.B., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 18p. + figs., 4 refs.  
Gordin, S.  
Icebreakers, Tanker ships, Marine transportation, Ice strength, Ice pressure, Forecasting, Tests.

40-3015

**Arctic hovercraft: lessons learned and future prospects.**

Dickins, D.F., Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 27p., 22 refs.  
Air cushion vehicles, Cold weather operation, Cold weather performance, Ice cover strength, Design, Sea ice, Ice conditions, Beaufort Sea.

40-3016

**Introduction of the air cushion vehicle "Larus" to the North American Arctic.**

Wainwright, J., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 8p.  
Makinen, E.  
Air cushion vehicles, Cold weather operation, Design, Transportation, Beaufort Sea.

40-3017

**Icebird—world's first purpose-built polar resupply vessel.**

Brune, E., Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 13p.  
Ships, Icebreakers, Ice navigation, Marine transportation.  
The Icebird's advanced design embraces many new features, resulting from the owner's experiences in Antarctic, Baltic and Canadian trades. The vessel is easily capable of breaking one year old ice in polar regions with continuous speed. The bow is constructed to the latest ice-breaking design and the stern is built to high standards, allowing the vessel to go astern without damaging the stern and propeller. Specifications of the ship's features are listed and shown in diagrams.

40-3018

**Engineering aspects of ice gouging and soft soil layers.**

Mahmood, A., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 14p. + figs., 10 refs.  
Williams, D.R.  
Ice scouring, Offshore structures, Ice loads, Soil strength, Ocean bottom, Soil mechanics, Design, Engineering, Offshore drilling, Artificial islands, Beaufort Sea.

40-3019

Seabed strengthening—a practical solution to weak soil conditions. Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 88p., 9 refs.  
Ocean bottom, Ice loads, Offshore structures, Soil strength, Ice conditions, Foundations, Ice pressure, Soil compaction, Design, Cost analysis.

40-3020

**Drilling in ice from the conical drillship Kallak.**

Haverson, P., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 15p. + figs.  
Pilkington, G.R.  
Offshore drilling, Ice cover thickness, Ice pressure, Fast ice, Ships, Ice loads, Artificial islands, Moorings, Forecasting, Ice navigation, Caissons.

40-3021

**Ice risk to offshore production operations.**

Bercha, F.G., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 28p., 16 refs.  
Griffin, B.J.  
Offshore structures, Ice pressure, Ice loads, Icebergs, Ice solid interface, Ice edge.

40-3022

**Review and assessment of some ice-related operational delays.**

Nessim, M.A., Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 21p., 14 refs.  
Offshore structures, Ice loads, Ice conditions, Design criteria, Ice islands, Icebergs, Ice floes.

40-3023

**Arctic offshore construction.**

Hibbeln, W., Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 11p.  
Offshore structures, Cold weather construction, Engineering, Safety, Cold weather survival, Transportation, Frostbite, Fires.

40-3024

**Offshore industry response to the proposed banning of Jet B fuel. Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985.**

Proceedings, [1985], 14p., 4 refs.  
Helicopters, Cold weather operation, Fuels, Temperature effects, Transportation, Beaufort Sea.

40-3025

**Offshore safety in Canmar's Beaufort Sea operations.**

Clark, A.G., et al, Arctic Offshore Technology Conference and Exposition, Anchorage, Alaska, Sep. 3-5, 1985. Proceedings, [1985], 12 sections + figs., 6 refs.  
Dobberthien, R.F., Kolomojcev, A., Palm, I.  
Cold weather survival, Ice cover thickness, Safety, Accidents, Loads (forces), Clothing, Beaufort Sea.

40-3026

**Regional and engineering geocryological investigations. (Regional'nye i inzhenernye geokriologicheskie issledovaniia).**

Klimovskii, I.V., ed, Yakutsk, 1985, 168p., In Russian. For individual papers see 40-3027 through 40-3047. Refs. passim.  
Gur'ianov, I.E., ed.  
Ice composition, Snow cover effect, Permafrost origin, Permafrost control, Permafrost distribution, Mapping, Slope processes, Rock glaciers, Solifluction, Permafrost beneath structures, Theories, Foundations, Topographic factors, Permafrost hydrology, Piles, Ground ice, Permafrost thermal properties.

40-3027

**Cryolithogenic covers on plateaus and placer deposits. (Ploskogornyy krioitogennyi pokrov i rossypj).**

Mel'nikov, P.I., et al, Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.3-21. In Russian. 13 refs.  
Klimovskii, I.V., Gotovtsev, S.P.  
Ice volume, Quaternary deposits, Permafrost distribution, Topographic effects, Cryogenic structures, Cryogenic textures, Ground ice.

- 40-3028**  
**River-bed alluvium in plains of the cryogenic zone.** [Konstrativnyi alluvii ravninnykh rek kriogennoi zony]. Zimov, S.A., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.21-34, In Russian. 11 refs.
- Loess, Eolian soils, Permafrost structure, Ice veins, Alluvium, Edoma complex, Wind erosion, Frost shattering.**
- 40-3029**  
**Chemical composition of ground ice layers in the lower Yenisey area.** [Khimicheski sostav plastovogo podzemnogo l'da v nizov'iax r. Eniseia]. Anisimova, N.P., et al, Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.34-44, In Russian. 3 refs.
- Karpov, E.G.**  
**Ground ice, Ice composition, Ice formation, Layers.**
- 40-3030**  
**Seasonal freezing of soils in central and northern Kazakhstan.** [Sezonnoe promerzanie pochv v Severnom i Tsentral'nom Kazakhstane]. Severskii, E.V., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.44-60, In Russian. 22 refs.
- Soil freezing, Active layer, Frost penetration, Soil water migration, Soil composition, Snow cover effect, Climatic factors.**
- 40-3031**  
**Cryogenic geomorphology of the Pleistocene outliers in the western sector of the Lena River delta.** [Merzlotnaia geomorfologiya pleistotsenovykh ostanov zapadnogo sektora del'ty Leny]. Grigor'ev, M.N., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.61-68, In Russian. 5 refs.
- Surveys, Ice composition, Permafrost structure, Permafrost transformation, Ground ice, Geocryology, Geomorphology, Hydrothermal processes.**
- 40-3032**  
**Formation of the composition of deposits in naled areas.** [O formirovani sostava otlozhenii na nalednykh uchastkakh]. Vyrtkin, V.B., et al, Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.68-74, In Russian. 8 refs.
- Sannikov, S.A.**  
**Plains, Alluvium, Naleds, Permafrost hydrology, Valleys, Rock streams.**
- 40-3033**  
**Buried ice in sands of the western Lena River delta.** [Pogrebennye l'dy v peschanykh otlozheniakh zapadnoi chasti del'ty r. Leny]. Korolev, S.I.U., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.74-80, In Russian. 6 refs.
- Moraines, Permafrost structure, Sands, Ground ice, Ice veins, Drilling, Layers, Permafrost thickness.**
- 40-3034**  
**Rock glaciers of the Ak-Shyrak rock mass.** [Kamennye gletchery massiva Ak-Shyrak]. Titkov, S.N., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.80-88, In Russian. 7 refs.
- Rock glaciers, Slope processes, Rock streams, Solifluction, Alpine landscapes.**
- 40-3035**  
**Cryolithologic characteristics of Pleistocene deposits in the Tuostakh trough.** [Kriolitologicheskaia kharakteristika pleistotsenovykh otlozhenii Tuostakhskoj vpadiny]. Zhiruev, S.P., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.88-91, In Russian. 3 refs.
- Permafrost origin, Permafrost distribution, Permafrost structure, Valleys, Ice veins, Ice wedges.**
- 40-3036**  
**Cryogenic topography of northern and central Kazakhstan.** [Merzlotnyi rel'ef Severnogo i Tsentral'nogo Kazakhstana]. Ermolin, E.D., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.91-101, In Russian. 4 refs.
- Continuous permafrost, Polygonal topography, Geocryology, Permafrost hydrology.**
- 40-3037**  
**Cryolithogenesis in the alluvium of small rivers in western Yakutia.** [Osobennosti kriolitogeneza v alluvii dolin melkikh rek Zapadnoi Iakutii]. Popov, V.A., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.101-105, In Russian.
- Valleys, Alluvium, Frost penetration, Permafrost beneath rivers, Permafrost structure.**
- 40-3038**  
**Dynamics of cryogenic parameters during economic development of the Medvezh'e deposit.** [Dinamika merzlotnykh parametrov pri khozialstvennom osvoenii mestorozhdenia "Medvezh'e"]. Rogatina, N.P., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.106-110, In Russian.
- Active layer, Soil water migration, Soil erosion, Economic development, Revegetation, Thermal regime.**
- 40-3039**  
**Role of clear-cut areas in the development of cryogenic landscapes in Central Yakutia.** [Rol' vyrubok v razviti merzlotnykh landshaftov Tsentral'noi Iakutii]. Fedorov, A.N., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.111-117, In Russian. 3 refs.
- Forestry, Forest fires, Soil erosion, Permafrost structure, Permafrost depth, Permafrost transformation, Alas, Human factors, Classifications.**
- 40-3040**  
**Temperature field of the transition zone between the Prilenskoe plateau and the Olekmo-Charskoe highlands.** [Temperaturnoe pole gornyykh porod perekhodnoi zony Prilenskogo plato i Olekmo-Charskogo ploskogor'ia]. Zhelezniak, M.N., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.117-127, In Russian. 4 refs.
- Permafrost distribution, Permafrost depth, Topographic features, Active layer, Temperature measurement.**
- 40-3041**  
**Countermeasures for man-induced unfrozen water in permafrost zones (cryopegs).** [K voprosu o bor'be s antropogennymi kriopegami]. Andreev, S.V., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.127-132, In Russian.
- Permafrost structure, Unfrozen water content, Human factors, Permafrost beneath structures, Permafrost thermal properties, Permafrost hydrology.**
- 40-3042**  
**Landscape-typological mapping as a basis for the extrapolation of studies made in experimental stations.** [Landshaftno-tipologicheskoe kartirovaniie kak osnova ekstrapoliatsii stationsarnykh issledovaniy]. Varlamov, S.P., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.132-137, In Russian. 4 refs.
- Landscape types, Mapping, Soils, Vegetation, Microclimatology.**
- 40-3043**  
**Regularities governing the formation and deterioration of snow-ice accumulations on roads.** [O zakonomernostyakh obrazovaniia i razrusheniia snezhnoledianyykh otlozhenii na avtomobil'nykh dorogakh]. Marvskii, A.A., et al, Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.137-141, In Russian. 4 refs.
- Pron'kin, G.S.**  
**Winter maintenance, Snow accumulation, Snow compaction, Road icing, Motor vehicles, Road maintenance.**
- 40-3044**  
**Stamping technique of determining strength and deformation characteristics of plastic frozen ground.** [Opredelenie prochnostnykh i deformativnykh kharakteristik plastichno-merzlykh gruntov stampami]. Fokin, V.A., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.141-147, In Russian. 8 refs.
- Penetration tests, Frozen rock strength, Plastic deformation, Plastic properties, Permafrost.**
- 40-3045**  
**Studying the performance of deeply sunk thermopiles on construction sites of permafrost areas.** [Issledovanie raboty termoustanovok glubokogo zalozheniia pri stroitel'stve na mnogoletnemerylykh gruntakh]. Grebenets, V.I., et al, Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.147-154, In Russian. 2 refs.
- Naumova, L.A.**  
**Permafrost hydrology, Taliks, Permafrost control, Thermopiles.**
- 40-3046**  
**Quick method of testing piles in solid-frozen ground by consecutive dynamometric loading.** [Uskorenniy sposob ispytaniia sval' s tverdomerzlykh gruntakh stupenchatym dinamometricheskimi zagruzheniyem]. Presnukhin, N.A., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.151-154, In Russian. 2 refs.
- Piles, Reinforced concretes, Permafrost beneath structures, Foundations, Settlement (structural).**
- 40-3047**  
**Laboratory studies of the freeze-thaw effect on strength of ground adfreeze to model piles.** [Laboratornye issledovaniia vliyaniia ottaivaniia-promerzaniia na sily smerzaniia grunta s modeliami sval', Kondrat'ev, S.D., Regional'nye i inzhenernye geokriologicheskie issledovaniia (Regional and engineering geocryological investigations) edited by I.V. Klimovskii and I.E. Gur'ianov, Yakutsk, 1985, p.154-159, In Russian. 3 refs.
- Freeze thaw cycles, Piles, Adhesion, Steels, Stresses, Foundations, Concretes, Models.**
- 40-3048**  
**Report of the oversnow traverse by the 25th Japanese Antarctic Research Expedition in 1984-1985 field season.** [Fujii, Y., et al, *Antarctic record*, Dec. 1985, No.87, p.46-69, In Japanese with English summary. 8 refs. Traverses, Ice sheets, Ice cover thickness, Radio echo soundings, Ice cores, Snow temperature, Antarctica—Queen Maud Land. JARE-25 carried out an inland glaciological traverse as the third-year field work for the East Queen Maud I and Glaciological (EQGP) from October 1984 to January 1985. An eight-man party including four glaciologists conducted the traverse of over 2500 km using four oversnow vehicles and 16 sledges. During the traverse, four strain-gauge stations, G1 (71°45', 43°E), G6 (73°15', 39°E), G7 (71°75', 39°E) and G15 (71°25', 46°E), were resurveyed. Positioning (JMR 4A), surface elevation determination, surface slope, gravity, ice thickness (radio echo sounding), installation of offset markers, 10-m ice coring and 10-m snow temperature measurement were carried out at the other five glaciological grid points. An advance camp was established at 74 deg 12'02"N, 34 deg 59'08"E and 3193 m ASL on October 21, 1984. In addition, to the strain grid installation and satellite positioning, a glaciological net similar to the one established at the base camp was set up. Unmanned meteorological observation at the camp was started with ARGOS system using NOAA-7, -8. The data have been sent in good condition to Japan via CNES, France. (Auth.)

40-3049

Activities of Japanese earth science research in the McMurdo Sound region.

Kaminuma, K., *Antarctic record*, Dec. 1985, No. 87, p.70-77, In Japanese with English summary. 7 refs. **Selamc surveys, Earthquakes, Gravity, Geological surveys, Antarctica—McMurdo Sound.**

Seismic observations have been carried out since December 1980 by a cooperative International Mount Erebus Seismological Studies (IMESS) which includes Japan, the United States and New Zealand. They were continued by JARE-25 at McMurdo Station from 11 November 1984 to 15 January 1985. Japanese scientists played back the magnetic tapes recorded since September 1984. Daily frequencies of eruptions and volcanic earthquakes occurring in and around Mount Erebus were counted and earthquakes were scaled. From 3 to 26 December 1984 seven seismic stations were established on the summit and the flank of Mount Erebus for explosion seismic experiments and for precise determination of earthquake locations. Five new gravity stations were established on Ross Island during the 1984-1985 field season. In order to enhance the study of the structure of the McMurdo volcanoes using both geophysical and geological methods, geological surveys were also carried out. Field studies were made on the volcanic rocks and the xenoliths of Cape Bird, Cape Crozier, Hut Point Peninsula and Black Island. (Auth. mod.)

40-3050

Climate of soils. (Klimat pochv).

Kuznetsov, M.S., ed, Pushchino, 1985, 180p., In Russian. For selected papers see 40-3051 through 40-3070. Refs. passim.

Voronin, A.D., ed, Dimo, V.N., ed. **Cryogenic soils, Microclimatology, Permafrost depth, Active layer, Organic soils, Environmental protection, Peat, Soil pollution, Remote sensing, Soils, Taiga, Soil water, Soil freezing, Tundra, Soil temperature, Hydrothermal processes.**

40-3051

Hydrothermal regime of taiga and tundra soils. (Gidrottermicheskiy rezhim taezhnykh i tundrovnykh pochv).

Zaboeva, I.V., et al, *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.7-13, In Russian. 2 refs. Kononenko, A.V., Kazakov, V.G. **Cryogenic soils, Active layer, Hydrothermal processes, Landscape types, Tundra, Taiga.**

40-3052

Climate of soils in the vertical zones of Caucasus and its control. (Klimat pochv vertikal'nykh zon Kavkaza i puti ego regulirovaniya).

Mamedov, R.G., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.24-27, In Russian. **Mountain soils, Seasonal freeze thaw, Solar radiation, Thermal regime, Alpine landscapes, Radiation balance, Heat flux.**

40-3053

Climate of soils in Buryat and its control. (Klimat pochv Buriatii i puti ego regulirovaniya).

Dugarov, V.I., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.30-33, In Russian. **Meadow soils, Permafrost distribution, Forest soils, Taiga, Seasonal freeze thaw, Hydrothermal processes, USSR—Transbaikalia.**

40-3054

Influence of human activities on hydrothermal regime of surface-gley taiga soils. (Vlianie antropogennogo faktora na gidrottermicheskiy rezhim taezhnykh po-verkhnostno-gleevatykh pochv).

Rudneva, E.N., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.33-37, In Russian. **Forest soils, Environmental protection, Taiga, Cryogenic soils, Thermal regime, Human factors.**

40-3055

Hydrothermal regime of dark grey eroded forest soils. (Gidrottermicheskiy rezhim temno-serykh lesnykh erodirovannykh pochv).

Makarova, G.P., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.45-49, In Russian. 3 refs. **Forest soils, Soil erosion, Seasonal freeze thaw, Snow cover effect, Hydrothermal processes.**

40-3056

Characteristics of soil types in the Tomsk area near the Ob' River according to hydrothermal regime. (Tipologicheskaya kharakteristika pochv Tomskogo Priob'ia po gidrottermicheskomu rezhimu).

Az'muka, T.I., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.92-96, In Russian. **Taiga, Frost penetration, Cryogenic soils, Paludification, Soil freezing, Thermal regime.**

40-3057

Climate of soil and snow melloration in the USSR. (Klimat pochvy i snezhnaya melioratsiya v SSSR).

Shul'gin, A.M., et al, *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.99-102, In Russian. **Somova, V.I.**

**Protective vegetation, Snow retention, Soil water migration, Snow cover effect.**

40-3058

Climate of drained peat soils of Karelia and the fertility of perennial grasses. (Klimat osushaemykh torfiannykh pochv Karelii i urozhainost' mnogoletnikh trav).

Nesterenko, I.M., et al, *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.102-105, In Russian. **Kozlov, L.G., Germanov, V.P., Klyputo, V.S.**

**Land reclamation, Drainage, Organic soils, Peat, Permafrost depth, Meltwater, Soil water migration, Swamps.**

40-3059

Climate of the developed marshes in Byelorussia and its control. (Klimat pochv osvobodnykh nizinnnykh bolot BSSR i ego regulirovaniye).

Shebeko, V.F., et al, *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.108-112, In Russian. 3 refs. **Kiseleva, A.I.**

**Land reclamation, Swamps, Organic soils, Soil temperature, Hydrothermal processes.**

40-3060

Improving the temperature regime of drained peat soils in the southwestern non-chozom zone of the RSFSR. (Uluchshenie temperaturnogo rezhima osushaemykh torfiannykh pochv iugo-zapada Nechernozemnoi zony RSFSR).

Shkalikov, V.A., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.114-118, In Russian. **Land reclamation, Swamps, Peat, Drainage, Soil temperature, Freeze thaw cycles.**

40-3061

Temperature conditions of drained floodplain soils. (Temperaturnye usloviya osushaemykh pol'mennykh pochv).

Inisheva, L.I., et al, *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.122-124, In Russian. **Starikova, V.G.**

**Soil freezing, Paludification, Land reclamation, Cryogenic soils, Floodplains, Peat, Freeze thaw cycles.**

40-3062

Advisability of wide utilization of thermal wastes of power plants for thermal melloration of soils. (O tselesobraznosti shirokogo ispol'zovaniya teplovykh otkhodov elektrostantsii dlia teplovoi melioratsii pochv).

Popovich, L.V., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.124-127, In Russian. **Heat recovery, Soil temperature, Wastes, Thermal effects, Cryogenic soils.**

40-3063

Results and prospects of studying heat balance and hydrothermal regime of soils in research stations of the cryolithozone. (Itogi i perspektivy statsionarnykh issledovaniy teplovogo balans i gidrottermicheskogo rezhima pochvy v kriolitozone).

Pavlov, A.V., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.127-131, In Russian. **Active layer, Cryogenic soils, Permafrost distribution, Heat balance, Landscape types, Hydrothermal processes.**

40-3064

Heat balance of the earth surface, soils and ground in permafrost areas of the USSR. (Teplovoy balans zemnoi poverkhnosti i pochv/ogruntov v oblasti vechno merzloty na territorii SSSR).

Gavrilova, M.K., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.131-136, In Russian. 2 refs. **Permafrost distribution, Surface temperature, Permafrost heat balance, Heat flux, Radiation balance.**

40-3065

Thermal resources of permafrost lands. (Termicheskie resursy merzlotnykh zemel').

Chigir, V.G., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.136-140, In Russian.

**Permafrost heat balance, Permafrost thermal properties, Solar radiation, Cryogenic soils, Active layer, Permafrost depth, Heat flux, Ice volume, Soil temperature.**

40-3066

Mapping thermal regime of soils in the northern Nechernozemnaia zone of the RSFSR on small and medium scale. (Kartografirovaniye teplovogo rezhima pochvogruntov severa Nechernozemnoi zony RSFSR v srednem i melkom mashtabe).

Snopkov, A.E., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.147-149, In Russian.

**Active layer, Permafrost depth, Permafrost distribution, Mapping, Thermal regime, Cryogenic soils.**

40-3067

Use of remote sensing in studying soil temperature and humidity. (Ispol'zovanie distantsionnykh metodov dlia izucheniya vlazhnosti i temperatury pochvy).

Andronikov, V.L., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.149-154, In Russian.

**Remote sensing, Snow cover distribution, Infrared photography, Soil water, Photointerpretation, Soil temperature.**

40-3068

Thermal regime of cryogenic meadow-swamp soils of Transbaikalia. (Teplovoy rezhim merzlotnykh lugovobolotnykh pochv Zabalkaii).

Khudiakov, O.I., et al, *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.154-157, In Russian. **Butsenko, A.N.**

**Meadow soils, Permafrost thermal properties, Swamps, Active layer, Organic soils, Permafrost depth, Thermal regime, Cryogenic soils, Snow cover effect.**

40-3069

Cryogenic-thermal boundaries controlling agricultural development of the North. (Merzlotno-termicheskie rubezhi, kontroliroiushchie sel'skokhoziaistvennoe osvoenie Severa).

Fominykh, L.A., et al, *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.168-171, In Russian. **Chigir, V.G.**

**River flow, Permafrost distribution, Water temperature, Heat flux, Heat transfer, Subglacial drainage, Floods, Snow cover effect, Tundra.**

40-3070

Cryogenesis and water regime of soils. (Kriogenez i vodnyi rezhim pochvy).

Khudiakov, O.I., *Klimat pochv* (Climate of soils) edited by M.S. Kuznetsov, A.D. Voronin and V.N. Dimo, Pushchino, 1985, p.171-177, In Russian. 3 refs.

**Soil water, Mathematical models, Permafrost hydrology, Ground ice, Thermal regime, Water reserves, Water balance.**

40-3071

Structure and productivity of plant communities (phytoplankton, phytobentos, higher aquatic plants) (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baykale, Sep. 4-6, 1985). Summaries. (Struktura i produktivnost' rastitel'nykh soobshchestv (fitoplankton, fitobentos, vysshaya vodnaya rastitel'nost'). Materialy).

Galazil, G.I., ed, Irkutsk, 1985, 7 vols., In Russian. For selected summaries see 40-3072 through 40-3091. **Vsesoiuznoe limnologicheskoe soveshchaniye "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985.**

**Lakes, Icebound lakes, Subglacial observations, Permafrost beneath lakes, Plankton, Algae, Biomass, Plant ecology, Water chemistry, Alpine landscapes, Ecosystems.**

## 40-3072

**Phytoplankton of the Sayano-Shushenskoe reservoir during its filling period.** [Fitoplankton Saiano-Shushenskogo vodokhranilishcha v period napolneniia]. Bazhenova, O.P., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.2, Irkutsk, 1985, p.13-15, In Russian.  
**Lakes, Plankton, Algae, Biomass, Alpine landscapes, Permafrost beneath lakes.**

## 40-3073

**Rhythms in the development of phytoplankton in the Bratsk reservoir.** [Ritmy razvitiia fitoplanktona Bratskogo Vodokhranilishcha]. Buntina, T.N., et al, Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.2, Irkutsk, 1985, p.16-18, In Russian.  
**Shirobokova, N.P.**  
**Plankton, Subglacial observations, Lakes, Biomass, Seasonal variations, Permafrost beneath lakes.**

## 40-3074

**Studies of algae and their production characteristics in the lakes of southern Yakutia.** [Al'gologicheskaia i produktionnaia kharakteristika ozer Iuzhnoi IAKutii]. Vasil'eva, I.I., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.2, Irkutsk, 1985, p.18-20, In Russian.  
**Plankton, Algae, Biomass, Lakes, Plant ecology, Ecosystems, Plant physiology.**

## 40-3075

**Long-term changes in the phytoplankton of the Angara reservoirs.** [Mnogoletnie izmeneniia fitoplanktona Angarskikh vodokhranilishch]. Vorob'eva, S.S., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.2, Irkutsk, 1985, p.20-22, In Russian.  
**Water storage, Reservoirs, Plankton, Algae, Biomass, Permafrost distribution, Permafrost beneath lakes.**

## 40-3076

**Dynamics of primary phytoplankton production in the Bratsk reservoir.** [Dinamika pervichnoi produkt-sii fitoplanktona v Bratskom vodokhranilishche]. Kozhova, O.M., et al, Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.2, Irkutsk, 1985, p.41-42, In Russian.  
**Pautova, V.N., Krashchuk, L.S.**  
**Lakes, Plankton, Plant ecology, Biomass, Seasonal variations.**

## 40-3077

**Destructive indices of plankton in the Bratsk reservoir.** [Destruiatsionnye pokazateli planktona Bratskogo vodokhranilishcha]. Nomokonova, V.I., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.2, Irkutsk, 1985, p.65-67, In Russian.  
**Lakes, Algae, Icebound lakes, Water chemistry, Oxygen, Plankton, Plant physiology, Plant ecology.**

## 40-3078

**Bacterial plankton of the Sayano-Shushenskoe reservoir during the first years of its filling.** [Bakterioplankton Saiano-Shushenskogo vodokhranilishcha v pervye gody napolneniia]. Avdeev, V.V., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.3, Irkutsk, 1985, p.4-5, In Russian.  
**Lakes, Plankton, Bacteria, Microbiology, Alpine landscapes, Biomass, Seasonal variations, Floods.**

## 40-3079

**Results of studying bacterioplankton in the Angara river and its reservoirs.** [Nekotorye itogi issledovaniia bakterioplanktona r. Angary i ee vodokhranilishch]. Zemskaia, T.I., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.3, Irkutsk, 1985, p.23-24, In Russian.  
**Bacteria, Water reserves, Plankton, Reservoirs, Lakes, Microbiology, Permafrost beneath rivers.**

## 40-3080

**Microzonal distribution of zooplankton at the lower ice surface in the shore area of Lake Baykal.** [Mikrozonai'noe raspredelenie zooplanktona u nizhnego po-verkhnosti l'da v pribrezhe Baikala]. Galazil, S.G., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.3, Irkutsk, 1985, p.67, In Russian.  
**Icebound lakes, Ice bottom surface, Subglacial observations, Plankton, Distribution.**

## 40-3081

**Numbers and biomass of hydrobionts in thermokarst lakes of the northern part of the Lena-Amginskoe interfluv.** [Chislennost' i biomassa gidrobiontov termokarstovykh ozer severnoi chasti Leno-Amginskogo mezhdurech'ia]. Fedorova, A.I., et al, Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.3, Irkutsk, 1985, p.94-95, In Russian.  
**Davydova, A.R.**  
**Lake ice, Thermokarst lakes, Water chemistry, Plankton, Bottom sediment.**

## 40-3082

**Influence of climatic factors on the intensity of thermokarst lake development.** [Vliianiia klimaticheskikh faktorov na intensivnost' razvitiia termokarstovykh ozer]. Bosikov, N.P., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.3, Irkutsk, 1985, p.9, In Russian.  
**Thermokarst development, Thermokarst lakes, Alassy, Soil erosion.**

## 40-3083

**Geochemistry of lacustrine sedimentation in the cryolithozone (exemplified by Central Yakutia).** [Geo-khimiia ozerogo osadonakopleniia kriolitozony (na primere Tsentral'noi IAKutii)]. Dmitriev, A.I., et al, Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.5, Irkutsk, 1985, p.93-95, In Russian.  
**Zhirkov, I.I., Pestriakova, L.A.**  
**Lacustrine deposits, Bottom sediment, Permafrost distribution, Permafrost beneath lakes.**

## 40-3084

**Economic development of sapropel under permafrost conditions.** [Osobennosti khoziaistvennogo ispol'zovaniia sapropelia v usloviakh kriolitozony]. Ivanov, K.P., et al, Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.5, Irkutsk, 1985, p.100-101, In Russian.  
**Gavril'ev, K.D.**  
**Continuous permafrost, Lacustrine deposits, Thermokarst lakes, Excavation, Sapropel.**

## 40-3085

**Forecasting ice cover formation on Lake Baykal.** [Prognozirovanie zamernaniia ledianogo pokrova na Baikale]. Kuimova, L.N., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.6, Irkutsk, 1985, p.34-35, In Russian.  
**Icebound lakes, Ice forecasting, Ice formation, Dating.**

## 40-3086

**Possible changes in ice and thermal regime of estuarine water-bodies induced by human activities.** [Vozmozhnye izmeneniia ledovo-termicheskogo rezhima ust'evykh vodoemov pod vlianiem khoziaistvennoi deiatel'nosti]. Min'kovskaja, R.I.A., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.6, Irkutsk, 1985, p.35, In Russian.  
**Estuaries, Deltas, Stream flow, Ice formation, Ice conditions, Ice forecasting, Ice navigation, Hydraulic structures.**

## 40-3087

**Peculiarities of exchange mechanisms in subglacial currents.** [Osobennosti mekhanizma obmena v podlednykh techeniakh]. Anisimova, E.P., et al, Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.6, Irkutsk, 1985, p.54-55, In Russian.  
**Speranskaia, A.A.**  
**Icebound lakes, Subglacial drainage, Turbulent flow, USSR—Baykal Lake.**

## 40-3088

**Influence of ice formation on hydrochemical regime of lakes in the Evoron-Chukchagirskaya basin.** [Vlianie l'doobrazovaniia na formirovanie gidrokhimicheskogo rezhima ozer Evoron-Chukchagirskoi vpadiny]. Ivanov, A.V., et al, Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.7, Irkutsk, 1985, p.41-42, In Russian.  
**Shesterkin, V.P., Poprich, G.I.**  
**Icebound lakes, Water chemistry, Ice formation, Chemical composition, Seasonal variations.**

## 40-3089

**Role of land reclamation in the enrichment of natural waters in macromolecules, biogenic and organic matter under conditions of the North.** [Rol' melioratsii v obogashchenii prirodnnykh vod makrokomponentami, biogennymi i organicheskimi veshchestvami v usloviakh Severa]. Kuraptsava, S.V., et al, Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.7, Irkutsk, 1985, p.54-55, In Russian.  
**Kharkevich, N.S.**  
**Land reclamation, Swamps, Drainage, Water chemistry, Composition, Organic soils.**

40-3090

**Mobility of mineral substances in shallow waters of the Bratsk reservoir.** [Dinamika mineral'nykh veshchestv v melkovod'nykh Bratskogo vodokhranilishchaj, Semenova, L.I., et al. Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.7, Irkutsk, 1985, p.68-70, In Russian.

**Lake water, Permafrost hydrology, Minerals, Water chemistry, Permafrost beneath lakes, Seasonal variations.**

40-3091

**Chemical composition of snow cover in the background areas of the Lake Baykal zone.** [K voprosu o khimicheskoi sostave snezhnogo pokrova fonovykh raionov Pribalkal'ia, Khodzher, T.V., Vsesoiuznoe limnologicheskoe soveshchanie "Krugovorot veshchestva i energii v vodoemakh", 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985 (All-Union limnologic conference on the cycle of matter and energy in water bodies, 6th, Listvenichnoe na Baikale, Sep. 4-6, 1985) edited by G.I. Galazil, Vol.7, Irkutsk, 1985, p.90, In Russian.

**Snow cover distribution, Snow surveys, Snow composition, Chemical composition.**

40-3092

**Distribution and abundance of the planktic foraminifer *Neoglobobulimina pachyderma* in sea ice of the Weddell Sea (Antarctica).**

Spindler, M., et al. *Polar biology*, 1986, 5(3), p.185-191, Refs. p.191.

Dieckmann, G.S.

**Sea ice, Ice cores, Antarctica—Weddell Sea.**

All cores from the northeastern part of the Weddell Sea ice contained numerous living and dead planktic foraminifers of the species *Neoglobobulimina pachyderma* (Ehrenberg), while cores drilled in southern parts were barren of foraminifers with one exception. Foraminiferal abundances were variable, with numbers up to 320 individuals per liter melted sea ice. Distribution of foraminifers appears to be patchy. Small dead tests were found in the upper parts of the sea ice cores while large living individuals mainly occurred in lower sections. Abundant diatoms probably serve as a food source for the foraminifers. Correlation of foraminiferal abundance with salinity, chlorophyll and nutrient profiles are inconsistent. The possible mechanism of incorporation of *N. pachyderma* into the ice is discussed. (Auth. mod.)

40-3093

**Retreat of ice scarps on an ice-cored moraine, Vestfold Hills, Antarctica.**

Pickard, J., *Zeitschrift für Geomorphologie*, Dec. 1984, 28(4), p.443-453, With German and French summaries. 10 refs.

**Ablation, Ice creep, Moraines, Ice surface, Antarctica—Vestfold Hills.**

Retreat of till-capped ice cliffs on ice-cored Flanders Moraine was measured at 35 transects over nine weeks of austral summer 1980-81 in the Vestfold Hills. Retreat of clean ice slopes was four times faster than of debris-covered slopes. Mean total retreat was 1.74 m on clean ice and 0.44 m on debris-covered ice, maximum mean rates of retreat were 0.46 and 0.13 m/week respectively. Retreat varied both spatially and temporally depending on the shape of the particular slope segment and weather. Slope evolution is postulated to vary with angle and depth of lakes at the foot of the slopes. Cliffs above deep lakes show parallel retreat due to block collapse whereas lower-angle slopes above shallow lakes decline. (Auth.)

40-3094

**Ecosystem properties of antarctic streams.**

Howard-Williams, C., et al. *New Zealand antarctic record*, [1985], Vol.6 Special issue, p.21-31, 14 refs.

Vincent, W.F.

**Glacial hydrology, Meltwater, Limnology, Algae, Antarctica—McMurdo Sound.**

This paper provides a short ecological perspective of some of the properties of the melt streams of the McMurdo Sound area. Discussed briefly are the stream discharge rates of glacial meltwater, nutrients in the stream, onset of photosynthesis, sediments, solar radiation, low temperatures, and algal growth. Identifiable ecosystem properties include low diversity, high instability, low efficiency, and high biomass potential and slow turnover.

40-3095

**Weathering within ice-cemented till and its significance for climatic stability in Antarctica.**

Claridge, G.G.C., et al. *New Zealand antarctic record*, [1985], Vol.6 Special issue, p.52-59, 5 refs.

Campbell, I.B.

**Glacial deposits, Weathering, Climatic changes, Frozen ground, Minerals, Antarctica—Coombs Hills, Antarctica—Convoy Range.**

Samples of ice-cemented soils formed from tills in the Coombs Hills and Convoy Ranges were obtained by drilling with a rock

auger. Ice-cement or frozen ground occurred between 5 and 40 cm below the surface. The uncemented soil was considered to be moderately weathered. Data for soluble salt content, particle size distribution and composition of the clay fraction are presented. It is shown that weathering has occurred to a depth of at least 1.4 m. It is believed that weathering took place when the ice-cement lay at a much greater depth. A subsequent change in moisture availability has caused the ice-cement to rise closer to the surface. (Auth.)

40-3096

**Precipitation in the Wright Valley.**

Bromley, A.M., *New Zealand antarctic record*, [1985], Vol.6 Special issue, p.60-68.

**Precipitation (meteorology), Snow accumulation, Weather observations, Ablation, Antarctica—Wright Valley.**

Snowfall observations in the Wright Valley area are reviewed and a description is given of other weather parameters associated with snowfalls. Typical weather sequences are shown of conditions prior to and during snow periods. Other forms of precipitation and obstructions to vision are summarized. (Auth. mod.)

40-3097

**Structure and equilibrium of the dry valleys glaciers.**

Chinn, T.J.H., *New Zealand antarctic record*, [1985], Vol.6 Special issue, p.73-88, 35 refs.

**Glacial geology, Glacier mass balance, Glacier flow, Cirque glaciers, Antarctica—Victoria Land.**

The glaciers of the Dry Valleys area region may be classified into the three types: Outlet Glaciers which are large ice streams draining from the Polar Ice Sheet. Coastal Piedmont Glaciers, the low, wide glaciers lying along the coastline, which flow both seaward and into inland valleys. Local Alpine Glaciers or small glaciers flowing from alpine cirques which rarely reach the main valley floors. All except the largest of these glaciers are dry based, i.e., temperatures at the glacier base are below freezing so that there is no subglacial meltwater to permit movement by sliding. They have limited evidence of any recent fluctuations and descent into major valleys cut by Late Tertiary glaciations and are frequently encircled at the snouts by moraine arcs which have been dated between 2.2 and 3.6 m.y. BP. This paper discusses the mass balance, equilibrium and margin structures of these glaciers. (Auth.)

40-3098

**Radio echo sounding of Canada Glacier, Taylor Dry Valley, Antarctica.**

Holdsworth, R., *New Zealand antarctic record*, [1985], Vol.6 Special issue, p.89-93, 3 refs.

**Glacier ice, Radio echo soundings, Antarctica—Canada Glacier.**

A brief account is given of the principles of taking radio echo soundings and the ease with which they may be used to measure glacier ice. Two profiles obtained on Canada Glacier are presented.

40-3099

**Radio-echo sounding in McMurdo Sound, Antarctica and Mt. Ruapehu, North Island, New Zealand.**

Holdsworth, R., *New Zealand antarctic record*, [1985], Vol.6 Special issue, p.92-96, 9 refs.

**Electronic equipment, Radio echo soundings, Ice cover, Antarctica—McMurdo Sound.**

A brief account is given of the operation of radio echo sounding equipment used to determine ice cover thickness or depth. Radio waves are transmitted through a dielectric material, reflected from a boundary, and detected as an attenuated pulse registered on an oscilloscope. Oscilloscopic interpretations are made based on the dielectric constant of the material: ice and/or rock, bubbles, firn, snow or any combination of these. Samples of depth/thickness calculations are given.

40-3100

**Structural design methods for surface ships operating at the ice edge.**

St. John, J.W., et al. *Naval engineers journal*, May 1986, 98(3), p.88-94, 7 refs.

Meyer, J.R.

**Ships, Ice loads, Ice pressure, Impact strength.**

40-3101

**Ice crystal nucleation on antarctic hygroscopic aerosols.**

Ohtake, T., et al. *Antarctic journal of the United States*, 1984, 19(5), p.201-202, 3 refs.

Fountain, A.G.

**Ice crystal nuclei, Aerosols, Antarctica—South Pole.**

Aerosols at the South Pole were sampled to (1) clarify the mechanism of formation of polar atmospheric ice crystals and (2) test their ice nucleation ability under humidity conditions that were below water-saturation level. This was done to determine whether or not the aerosols would nucleate ice crystals through direct condensation of water vapor at temperatures lower than -25°C. The ice nucleus concentrations on filters were measured at the South Pole with a vapor-diffusion type ice nucleus counter at temperatures of -25°C and -37°C and humidities at ice saturation and between ice- and water-saturations in Dec. 1982 and Nov. 1983, respectively. It is suggested, on the basis of the observations, that many aerosols in the polar atmosphere deliquesce in ambient humid air of about 82% relative humidity (in 1982) and 79% relative humidity (in 1983) and are followed by freezing of the submicron-sized water droplets to ice crystals at temperatures below -25°C and -37°C, respectively.

40-3102

**World Data Center-A for Glaciology Antarctic-related activities, 1983-1984.**

Barry, R.G., et al. *Antarctic journal of the United States*, 1984, 19(5), p.245-246, 2 refs.

Brennan, A.M.

**Ice, Snow, Glaciology.**

The World Data Center-A for Glaciology (Snow and Ice) (WDC-A) has been involved in 1983 with several antarctic data management, analysis, and archiving projects. Because of the climatic significance of antarctic snow- and ice-phenomena, WDC-A organized and convened a specialist workshop to address the problems of antarctic climate-related data. Twelve participants and six observers (from eight countries) representing the major disciplinary fields of antarctic climate research and specialists on data management took part. WDC-A has contributed a "Snow and Ice" chapter to the CODATA Directory of Data Sources for Science and Technology.

40-3103

**Proceedings.**

**International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986, MP 2031, New York, American Society of Mechanical Engineers, 1986, 4 vols., Refs. passim. For selected papers see 40-3104 through 40-3199.**

Chung, J.S., ed.

**Offshore structures, Offshore drilling, Ice loads, Ice conditions, Engineering, Meetings, Ice mechanics, Ice solid interface, Impact strength, Ice strength.**

40-3104

**Computer control system for ice-transiting ships.**

Kashima, T., et al. *International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.1, New York, American Society of Mechanical Engineers, 1986, p.25-30, 19 refs.*

Seireg, A.A.

**Ice navigation, Computer applications, Ships, Velocity, Propellers, Analysis (mathematics).**

40-3105

**Ice mass motions near an offshore structure.**

Isaacson, M. de St. Q., *International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.1, New York, American Society of Mechanical Engineers, 1986, p.441-447, 8 refs.*

**Offshore structures, Ice mechanics, Drift, Impact strength, Forecasting, Ocean waves, Ocean currents, Hydrodynamics, Analysis (mathematics), Computer applications.**

40-3106

**Steel plates for offshore structures and ice breaking vessels.**

Kitada, T., et al. *International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1986, p.332-337, 5 refs.*

**Tagawa, H., Matsumoto, K., Taira, T., Sugiyama, T. Offshore structures, Steel structures, Icebreakers, Chemical composition, Design, Temperature effects.**

40-3107

**New high strength steel plate for ice-breaking ships designed to operate in low ambient temperatures.**

Amano, K., et al. *International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1986, p.338-345, 7 refs.*

**Icebreakers, Steel structures, Welding, Design, Temperature effects.**

40-3108

**High strength bend pipe for low temperature service.**

Nagumo, M., et al. *International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1986, p.346-353, 5 refs.*

**Pipes (tubes), Steel structures, Cold weather performance, Welding, Strength.**

40-3109

**Developments in materials for Arctic offshore-structures.**

Nakano, N., et al. *International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1986, p.354-360, 10 refs.*

**Bessyo, K., Iida, Y., Seta, I., Kamada, Y. Offshore structures, Construction materials, Steel structures, Icebergs, Chemical composition, Strength, Welding.**

40-3110

Qualities of high-strength lightweight concrete used for construction of Arctic offshore platform.

Tachibana, D., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1986, p.361-367, 11 refs.

Imai, M., Okada, T.

Concrete structures, Offshore structures, Concrete strength, Freeze thaw tests, Lightweight concretes, Concrete durability, Manufacturing, Compressive properties, Cracking (fracturing).

40-3111

Welding procedure and fracture toughness on heavy thickness plate for offshore structures in deep seas. Kohno, T., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.2, New York, American Society of Mechanical Engineers, 1986, p.397-402.

Offshore structures, Welding, Steel structures, Fracturing, Brittleness, Countermeasures, Chemical composition, Temperature effects, Plates.

40-3112

Underwater support of marine operations in the Canadian Arctic.

English, J.G., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.3, New York, American Society of Mechanical Engineers, 1986, p.297-300.

Offshore structures, Hydraulic structures, Equipment, Design, Welding, Ships, Winter maintenance.

40-3113

Probabilistic method to determine system efficiency in an iceberg environment.

Brooks, L.D., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.1-7, 6 refs.

Petrauskas, C.

Offshore structures, Ice loads, Icebergs, Ice conditions, Floating structures, Models, Offshore drilling, Statistical analysis.

40-3114

Automatic weather station in a sub-Arctic environment.

Barton, J.S., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.8-12, 5 refs.

Quinn, A.J., Smith, S.D.

Remote sensing, Weather stations, Icing, Wind velocity, Data transmission, Mountains.

40-3115

Arctic environmental design using short data extremal techniques.

Maes, M.A., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.13-19, 15 refs.

Jordaan, J.J.

Offshore structures, Ice pressure, Icebergs, Ocean waves, Design, Statistical analysis, Analysis (mathematics).

40-3116

On the Arctic marine environment offshore northern Norway.

Houmb, O.G., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.20-26, 8 refs.

Söras, P.E., Tryggvason, S.

Ship icing, Ocean environments, Ice accretion, Supercooling, Water temperature, Air temperature, Weather forecasting, Spray freezing.

40-3117

Prediction of the current structure under drifting pack ice.

Myrhaug, D., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.45-52, 11 refs.

Ocean currents, Pack ice, Subglacial observations, Drift, Boundary layer, Turbulent flow, Shear stress, Mathematical models.

40-3118

Performance of a frost heave cell for low-temperature-gradient experiments.

Svec, O.J., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.53-57, 7 refs.

Frost heave, Temperature gradients, Heat transfer, Ice formation, Soil freezing, Low temperature tests, Design, Ice lenses, Thermistors.

40-3119

Effects of stress redistribution on creep parameters determined by a borehole dilatometer test.

Murat, J.R., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.58-64, 16 refs.

Huneault, P., Ladanyi, B.

Boreholes, Soil creep, Stresses, Ice creep, Measuring instruments, Elastic properties, Rheology.

40-3120

Buckling of heated oil pipelines in frozen ground.

Vinogradov, A.M., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.65-72, 39 refs.

Hot oil lines, Frozen ground mechanics, Permafrost beneath structures, Rheology, Buckling, Soil creep, Thermal expansion, Compressive properties, Time factor, Temperature effects, Pipeline supports.

40-3121

Arctic pipeline construction simultaneous trench and lay through landfast ice.

Healey, A.J., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.73-80, 6 refs.

Roberts, R.A., Hazlegrove, B.M.

Pipe laying, Beaufort Sea, Fast ice, Trenching, Hydraulic structures, Ice cover thickness, Cold weather construction, Ice conditions, Stresses.

40-3122

Iceberg generated pits: a theoretical study.

Bass, D.W., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.81-83, 15 refs.

Gaskill, H.S., Carter, W.

Ice scoring, Icebergs, Ocean bottom, Bottom topography, Impact strength, Pits (excavations), Theories, Mathematical models.

40-3123

Man-made ice island performance.

Domaschuk, L., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.89-95, 5 refs.

Ice islands, Artificial islands, Ice loads, Underwater observations, Ice mechanics, Erosion, Ice breakup, Sea ice, Ice pressure, Ice temperature, Ice physics.

40-3124

Observations on the strength properties of spray ice.

Weaver, J.S., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.96-104, 9 refs.

McKeown, S.

Ice strength, Ice islands, Artificial islands, Stress strain diagrams, Shear strength, Spray freezing, Temperature effects, Fast ice, Tests, Offshore structures.

40-3125

Construction of a sprayed ice island for exploration.

Goff, R.D., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.105-112, 6 refs.

Masterson, D.M.

Offshore drilling, Ice islands, Artificial islands, Spray freezing, Exploration, Experimentation, Design, Beaufort Sea.

40-3126

Iceberg scouring model; a remedy for survey planning, data interpretation and technical evaluations.

Lien, R., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.113-119, 7 refs.

Ice scoring, Icebergs, Pipelines, Ocean bottom, Bottom topography, Models, Acoustic measurement, Seismic surveys.

40-3127

Ice used as a permanent construction material.

Marthinsen, A., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.120-128, 11 refs.

Ice (construction material), Aircraft landing areas, Ice strength, Compressive properties, Tests.

40-3128

Strengthening Alaskan Beaufort Sea soils with portland cement.

Nidowicz, B., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.129-134, 19 refs.

Bruggers, D.E.

Soil strength, Cements, Ocean bottom, Ice loads, Artificial islands, Gravity, Compressive properties, Soil physics, Beaufort Sea.

40-3129

Ice properties in a grounded man-made ice island.

Cox, G.F.N., et al, MP 2032, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.135-142, 19 refs.

Utt, M.F.

Ice islands, Grounded ice, Ice salinity, Ice temperature, Ice density, Shear strength, Ice loads, Artificial islands, Tests, Offshore structures.

Salinity, temperature, density, and shear strength tests were performed on the confined flooded ice in the 1976-77 East Harrison Bay grounded ice island. The constructed ice had a mean salinity of 13.8 ppt, a mean density of 877 kg/cu m, and a mean horizontal shear strength of 0.74 MPa. The shearing resistance of the constructed ice and the sliding resistance of the island on the sea floor were sufficient to prevent the island from being pushed off location by ice movement.

40-3130

Creep movement of rigid particles embedded in ice.

Domaschuk, L., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.143-144, 2 refs.

Shields, D.H., Rahman, M.G.

Impurities, Particles, Rheology, Ice loads, Penetration, Creep, Loads (forces), Experimentation.

40-3131

Design considerations for concrete offshore platforms subjected to iceberg impact loads.

Zaleski-Zamenhof, L.C., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.145-152, 30 refs.

Rojansky, M.

Offshore structures, Concrete structures, Ice loads, Impact strength, Icebergs, Design, Safety.

40-3132

Economical Arctic structures using concrete.

Zinserling, M., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.153-159, 6 refs.

Cichanski, W.

Offshore structures, Concrete structures, Floating structures, Ice loads, Offshore drilling, Walls, Loads (forces).

40-3133

Base skirts for Arctic offshore drilling platforms.

Buslov, V.M., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.160-167, 12 refs.

Offshore structures, Floating structures, Offshore drilling, Foundations, Ice loads, Soil strength, Bottom sediment, Gravity, Loads (forces), Ocean bottom, Ice scoring, Design.

- 40-3134**  
Design studies for an Arctic heavy lift air cushion vehicle.  
Tangren, R.F., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.168-174, 8 refs.  
Dickins, D.F.  
Air cushion vehicles, Ice cover strength, Sea ice, Offshore drilling, Offshore structures, Design, Propellers, Beaufort Sea.
- 40-3135**  
Towards the estimation of the icing hazard for mobile offshore drilling units.  
Lozowski, E.P., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.175-182, 24 refs.  
Gates, E.M., Makkonen, L.  
Icing, Equipment, Offshore drilling, Sea spray, Ice accretion, Spray freezing, Ships, Models, Superstructures, Wind tunnels, Tests.
- 40-3136**  
Performance of Beaudril's new Beaufort Sea drilling system.  
Hnatuk, J., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.183-191, 9 refs.  
Felzien, E.E.  
Offshore drilling, Ice conditions, Floating structures, Design, Exploration, Sea ice, Caissons, Icebreakers, Ships, Beaufort Sea.
- 40-3137**  
Design study of a 200,000 DWT icebreaking tanker.  
Fujita, Y., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.192-199, 6 refs.  
Narita, H., Kitagawa, H.  
Icebreakers, Tanker ships, Sea ice distribution, Design, Marine transportation, Ice conditions, Models.
- 40-3138**  
Longitudinal strength of a large ice-breaking tanker.  
Matsushima, Y., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.200-205, 11 refs.  
Okumoto, Y., Kumakura, Y.  
Icebreakers, Tanker ships, Ice conditions, Ice cover thickness, Design, Strength, Sea ice distribution.
- 40-3139**  
Evaluation of a removable subarctic platform concept.  
Hollings, J.P., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.206-211, 1 ref.  
Sause, R., Row, D.G., Schriker, V.  
Offshore structures, Floating structures, Ice loads, Foundations, Ice solid interface, Offshore drilling, Impact strength, Gravity, Design.
- 40-3140**  
Ice-induced dynamic loads on offshore structures.  
Daoud, N., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.212-218, 16 refs.  
Lee, F.C.  
Offshore structures, Ice loads, Dynamic loads, Ice models, Ice solid interface, Fatigue (materials), Ice pressure, Ice breaking.
- 40-3141**  
Study on tank heating in Arctic merchant vessels.  
Oka, M., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.219-226, 2 refs.  
Ice navigation, Tanks (containers), Ships, Heating, Sea water freezing, Heat transfer, Design, Analysis (mathematics).
- 40-3142**  
Free and forced convection heat transfer in water over a melting horizontal ice sheet.  
Lunardini, V.J., MP 2033, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.227-236, 24 refs.  
Ice melting, Heat transfer, Water flow, Ice temperature, Ice sheets, Water temperature, Convection.  
Experiments were conducted to study the melting of a horizontal ice sheet with a flow of water above it. The experiments were conducted in a refrigerated flume 35 m long with a cross section of 1.2 x 1.2 m. Water depth, temperature, and velocity were varied as well as the temperature and initial surface profile of the ice sheet. It was found that the heat transfer regimes consisted of forced turbulent flow at high Reynolds numbers with a transition to free convection heat transfer at lower Reynolds numbers. There was no convincing evidence of a forced laminar regime.
- 40-3143**  
Boundary integration equation method without matrices.  
Hromadka, T.V., II, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.237-243, 3 refs.  
Soil freezing, Soil water, Freezing rate, Mathematical models, Computer programs.
- 40-3144**  
Heat loss factors affecting the design of deep Arctic steam wells.  
Galate, J.W., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.244-253, 17 refs.  
Heat transfer, Wells, Ground thawing, Permafrost thermal properties, Heat loss, Steam, Temperature effects, Models, Time factor, Boreholes.
- 40-3145**  
Effects of wall interaction on freezing materials.  
Chen, C.-K., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.254-259, 10 refs.  
Chen, H.-T.  
Freezing points, Walls, Stefan problem, Phase transformations, Melting points, Analysis (mathematics), Temperature variations, Liquid solid interfaces, Boundary layer.
- 40-3146**  
Experimental study of ice accretion on structural members.  
Grant, I., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.260-265, 9 refs.  
Hayhoe, R.D.  
Ice accretion, Icing, Offshore structures, Air temperature, Wind velocity, Tests.
- 40-3147**  
Thermodynamic stability of frazil ice crystals.  
Forest, T.W., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.266-270, 13 refs.  
Frazil ice, Ice crystal growth, Thermodynamics, Turbulent flow, Water flow, Ice crystal structure.
- 40-3148**  
Apparatus to perform experiments on soil freezing.  
Gori, F., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.271-276, 10 refs.  
Grazzini, G.  
Soil freezing, Equipment, Soil water, Thermal conductivity, Stefan problem, Experimentation, Temperature measurement, Unfrozen water content, Frost penetration, Sands.
- 40-3149**  
Cyclic freeze-thaw influence on frost heaving pressures and thermal conductivities of high water content clays.  
Yong, R.N., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.277-284, 12 refs.  
Boonsinsuk, P., Tucker, A.E.  
Freeze thaw cycles, Frost heave, Thermal conductivity, Soil water, Clays, Grain size, Water content, Pressure, Thermal properties, Experimentation.
- 40-3150**  
Heat transfer characteristics of thermosyphons with inclined evaporator sections.  
Haynes, F.D., et al, MP 2034, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.285-292, 21 refs.  
Zarling, J.P.  
Heat transfer, Evaporation, Permafrost thermal properties, Thermal conductivity, Permafrost beneath structures, Foundations, Wind velocity, Air temperature, Tests, Thaw depth.  
Laboratory tests were conducted on two commercial full-size thermosyphons, one charged with carbon dioxide and one with ammonia. The test variables were evaporator inclination angle, wind speed and ambient air temperature. Empirical expressions are presented for thermal conductance as a function of these test variables. The laboratory test results were used in finite element simulations run on an IBM-PC microcomputer to study three design parameters influencing the thermal regime below slab-on-grade foundations in a permafrost location. Insulation thickness, thermosyphon conductance and vertical placement were varied in these simulations. The effect of these variables on the maximum depth of thaw are given.
- 40-3151**  
Effects of ice-growth rate on the flexural properties of urea ice.  
Yamaguchi, E., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.293-297, 6 refs.  
Iwata, S., Andoh, M., Kitazawa, T.  
Ice strength, Flexural strength, Urea, Ice growth, Ice crystal structure, Ice elasticity, Ice cover thickness.
- 40-3152**  
Strength and ductility of ice under tension.  
Lee, R.W., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.298-302, 20 refs.  
Schulson, E.M.  
Ice strength, Tensile properties, Ice crystal nuclei, Ice cracks, Brittleness, Grain size, Tests, Crack propagation, Stress strain diagrams.
- 40-3153**  
Mechanical properties of antarctic sea ice.  
Urabe, N., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.303-309, 24 refs.  
Inoue, M.  
Ice mechanics, Ice acoustics, Compressive properties, Ice physics, Ice salinity, Temperature effects, Air entrainment, Grain size, Sea ice, Ice cracks, Antarctica—Lützow-Holm Bay.  
Ice samples were extracted from a land-fast ice sheet of 90 cm thickness at Lützow-Holm Bay. The ice samples were then shipped to a cold room in Tokyo, and unconfined uniaxial compression tests and fracture toughness tests were performed for a wide range of loading rate under temperature varying from -5°C to -30°C. During the tests, limited in number, acoustic emission measurements were also carried out. Distributions of salinity, density, air content, fabric structure and grain size were examined along the thickness direction of the ice sheet. The ice sheet consisted of fine grained granular ice at the top surface layer and columnar grains below it. The fracture toughness (K<sub>IC</sub>) of the columnar grained ice showed a strong dependence on the grain size (diameter of the columnar ice). The compressive strength showed a linear relationship with the density which was a function of not only the brine volume but also the air content. (Auth. mod.)

- 40-3154**  
**Variations of the local failure pressure with depth through first-year and multi-year ice.**  
Blanchet, D., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.310-319, 30 refs.
- Ice pressure, Ice cover thickness, Ice floes, Strains, Offshore structures, Ice salinity, Ice physics, Ice cracks, Ice loads, Ice strength.**
- 40-3155**  
**Method to upgrade iceberg velocity statistics to include wave-induced motion.**  
Lever, J.H., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.320-327, 30 refs.
- Sen, D.**  
**Icebergs, Ice loads, Offshore structures, Drift, Ice solid interface, Ice mechanics, Ocean waves, Statistical analysis, Models, Velocity, Impact strength.**
- 40-3156**  
**Borehole jack: is it a useful arctic tool.**  
Sinha, N.K., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.328-335, 11 refs.
- Equipment, Boreholes, Ice loads, Ice mechanics, Viscoelasticity, Ice deformation, Stresses, Tests, Rheology.**
- 40-3157**  
**Preliminary study of scale effect on flexural strength of ice specimen.**  
Tozawa, S., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.336-340, 7 refs.
- Taguchi, Y.**  
**Ice strength, Flexural strength, Tensile properties, Mathematical models, Tests.**
- 40-3158**  
**Effects of anisotropy and microcracks on the fracture toughness  $K_{Ic}$  of freshwater ice.**  
Timco, G.W., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.341-348, 27 refs.
- Frederking, R.M.W.**  
**Ice strength, Ice loads, Ice cracks, Anisotropy, Stresses, Grain size, Tests, Loads (forces), Crack propagation, Microstructure, Fracturing.**
- 40-3159**  
**Fracture toughness of ice over a range of grain sizes.**  
Nixon, W.A., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.349-353, 23 refs.
- Schulson, E.M.**  
**Ice cracks, Grain size, Fracturing, Ice strength, Ice crystal structure, Distribution, Temperature effects.**
- 40-3160**  
**Fracture toughness of Bohai Bay sea ice.**  
Shen, W., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.354-357, 6 refs.
- Lin, S.**  
**Ice cracks, Fracturing, Ice strength, Sea ice, Loads (forces), Stresses, Ice crystal structure.**
- 40-3161**  
**Physical modeling and the fracture toughness of sea ice.**  
Parsons, B.L., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.358-364, 20 refs.
- Snellen, J.B., Hill, B.**  
**Ice cracks, Fracturing, Ice physics, Ice models, Sea ice, Ice crystal structure, Temperature effects, Microstructure, Tests.**
- 40-3162**  
**Confined compressive strength of multi-year pressure ridge sea ice samples.**  
Cox, G.F.N., et al, MP 2035, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.365-373, 17 refs.
- Richter-Menge, J.A.**  
**Pressure ridges, Ice strength, Compressive properties, Loads (forces), Sea ice, Strain tests, Temperature effects, Pressure, Stresses.**
- Fifty-five constant-strain-rate triaxial tests were performed on vertically oriented multi-year pressure ridge samples from the Beaufort Sea. The tests were performed on a closed-loop electrohydraulic testing machine at two nominal strain rates (1/100,000 and 1/1,000 per sec) and two temperatures (-20 and -5 C). In all of the tests the confining pressure was ramped in constant proportion to the applied axial stress. This paper summarizes the sample preparation and testing techniques used in this investigation and presents data on the confined compressive strength and failure strain of the ice. Uniaxial data are also included for comparison.**
- 40-3163**  
**Large-scale ice strength test at slow strain rates.**  
Chen, A.C.T., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.374-378, 6 refs.
- Lee, J.**  
**Ice strength, Strain tests, Compressive properties, Ice deformation, Sea ice, Loads (forces), Ice crystal structure, Ice temperature, Ice salinity.**
- 40-3164**  
**Laboratory compression tests of sea ice at slow strain rates from a field test program.**  
Wang, Y.S., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.379-384, 6 refs.
- Poplin, J.P.**  
**Ice strength, Compressive properties, Strain tests, Sea ice, Ice crystal structure, Grain size.**
- 40-3165**  
**Analysis and prediction of short-term ice drift.**  
McPhee, M.G., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.385-394, 9 refs.
- Ice mechanics, Drift, Ice models, Sea ice, Ice edge, Forecasting.**
- 40-3166**  
**Nowcasting sea ice movement through the Bering Strait.**  
Kozo, T.L., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.394-402, 24 refs.
- Stringer, W.J., Torgerson, L.J.**  
**Drift, Ice mechanics, Sea ice, Ice jams, Stresses, Ocean currents, Forecasting, Velocity, Wind velocity, Atmospheric pressure, Bering Strait.**
- 40-3167**  
**Free drift sea ice motion forecasting: A comparative study of models.**  
Gaskill, H.S., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.403-409, 8 refs.
- Harris, J.**  
**Drift, Sea ice, Ice mechanics, Offshore drilling, Ice floes, Icebergs, Forecasting, Models, Wind factors, Ocean currents.**
- 40-3168**  
**Methodology for the determination of drag coefficients for ice floes.**  
Madsen, O.S., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.410-417, 17 refs.
- Bruno, M.S.**  
**Ice mechanics, Ice floes, Ice water interface, Ocean currents, Wind factors, Analysis (mathematics).**
- 40-3169**  
**Evaluation of a model for predicting the drift of iceberg ensembles.**  
El-Tahan, H., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.418-425, 16 refs.
- Venkatesh, S., El-Tahan, M.**  
**Icebergs, Drift, Ice mechanics, Forecasting, Mathematical models, Ice volume.**
- 40-3170**  
**Standard statistical approach to modeling iceberg drift.**  
Chandler, P.C.P., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.426-431, 10 refs.
- Drift, Icebergs, Ice mechanics, Forecasting, Statistical analysis, Mathematical models, Grounded ice.**
- 40-3171**  
**Whole-field measurement of ice displacement and strain-rates.**  
Conley, E., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.432-435, 11 refs.
- Cloud, G.**  
**Glacier flow, Ice mechanics, Geophysical surveys, Strains, Mapping, Photography.**
- 40-3172**  
**Model tests of jacket structure in ice tank.**  
Nawata, T., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.436-443, 11 refs.
- Kawasaki, T., Yano, S., Ishikawa, S.**  
**Offshore structures, Ice conditions, Ice models, Ice loads, Ice solid interface, Tests.**
- 40-3173**  
**Indentation and penetration of edge-loaded freshwater ice sheets in the brittle range.**  
Timco, G.W., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.444-452, 25 refs.
- Ice cracks, Ice cover strength, Brittleness, Loads (forces), Ice sheets, Penetration, Ice breaking, Tests, Ice cover thickness, Ice mechanics.**
- 40-3174**  
**Analysis of failure modes and damage processes of freshwater ice in indentation tests.**  
Tomin, M.J., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.453-460, 23 refs.
- Cheung, M., Jordaan, I.J., Corneau, A.**  
**Ice cracks, Fracturing, Offshore structures, Ice solid interface, Ice loads, Penetration, Floating ice, Mathematical models, Velocity.**
- 40-3175**  
**Total ice forces on the clusters of cylindrical piles.**  
Saeki, H., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.461-466, 7 refs.
- Ono, T., Takeuchi, T., Suenaga, E.L., Sakai, M.**  
**Ice pressure, Piles, Ice loads, Offshore structures, Ice solid interface, Design, Ice sheets, Tests, Analysis (mathematics).**
- 40-3176**  
**Large scale versus small scale ice force predictions.**  
Rojansky, M., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.467-471, 10 refs.
- Ice strength, Ice breakup, Offshore structures, Ice loads, Ice solid interface, Ice plasticity, Ice pressure, Forecasting, Tests, Brittleness, Design.**

40-3177

**Three dimensional analysis of ice sheet indentation: lower bound solutions.**

Karr, D.G., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.472-478, 21 refs.

**Ice pressure, Ice plasticity, Ice sheets, Ice strength, Ice elasticity, Ice crystal structure, Sea ice, Anisotropy, Stresses.**

40-3178

**Experimental study of indentation of columnar grained ice sheets in the transition zone.**

Michel, B., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.479-485, 16 refs.

Jolicœur, L.

**Ice strength, Ice floes, Ice loads, Offshore structures, Impact strength, Brittleness, Tests, Ice cover thickness, Velocity.**

40-3179

**Anisotropic sea ice indentation in the creeping mode.**

Sunder, S.S., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.486-496, 41 refs.

Ganguly, J., Ting, S.-K.

**Ice creep, Sea ice, Anisotropy, Stresses, Ice pressure, Offshore structures, Models, Analysis (mathematics), Ice solid interface.**

40-3180

**Flexural failure of softening ice sheets.**

Wierzbicki, T., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.497-506, 19 refs.

Xirouchakis, P., Choi, S.K.

**Ice strength, Flexural strength, Floating ice, Ice deformation, Ice plasticity, Ice cracks, Loads (forces).**

40-3181

**Ice forces on fixed conical structures.**

Clough, H.F., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.507-514, 13 refs.

Vinson, T.S.

**Ice loads, Offshore structures, Flexural strength, Ice cover thickness, Ice pressure, Ice floes, Velocity, Ice temperature, Tests.**

40-3182

**Ice forces on inclined structures.**

Hirayama, K., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.515-520, 16 refs.

Obara, I.

**Ice loads, Offshore structures, Ice pressure, Ice solid interface, Mathematical models, Tests, Ice breaking, Ice override.**

40-3183

**Effect of natural defects on sea ice loading.**

Aota, M., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.521-527, 7 refs.

**Ice loads, Sea ice, Ice strength, Ice cracks, Defects, Ice composition, Tests.**

40-3184

**Some effects of friction on ice forces against vertical structures.**

Kato, K., et al, MP 2036, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.528-533, 17 refs.

Sodhi, D.S., Haynes, D.

**Ice loads, Ice friction, Offshore structures, Ice breaking, Ice solid interface, Ice conditions.**

The contributions of frictional forces to the overall ice forces exerted against sloping structures have been studied before, but their effect on the ice forces against vertical structures has not yet been studied. In this paper, the influence of frictional resistance on the crushing and buckling failure loads of ice sheets against flat, vertical structures is discussed. Small-scale experi-

ments were conducted to compare experimental results to those from theoretical formulations. The main conclusions of this study are: a) the crushing ice forces increase with increasing coefficient of friction between ice and structure, and b) the buckling failure loads also increase due to changes in boundary condition induced by increasing frictional resistance at the ice-structure interface.

40-3185

**Various materials.**

Sacki, H., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.534-540, 5 refs.

Ono, T., Takeuchi, T., Kanie, S., Nakazawa, N.

**Ice loads, Offshore structures, Ice adhesion, Ice strength, Water level, Sea ice, Materials, Caissons, Towers.**

40-3186

**Address forces on offshore platforms.**

Cammaert, A.B., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.541-548, 14 refs.

**Ice adhesion, Offshore structures, Ice loads, Ice strength, Platforms, Tests, Air temperature, Models.**

40-3187

**Multiyear ice floe collision with a massive offshore structure.**

Gershunov, E.M., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.549-554, 16 refs.

**Ice floes, Offshore structures, Impact strength, Ice loads, Ice solid interface, Ice pressure, Analysis (mathematics).**

40-3188

**Iceberg-structure interaction global and local loads.**

Brown, T.G., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.555-560, 16 refs.

Kocaman, A., Punj, V., Bercha, F.G.

**Ice loads, Offshore structures, Icebergs, Ice solid interface, Ice pressure, Impact strength, Rheology Dynamic loads, Models.**

40-3189

**Model tests on the dynamic behavior of a floating, cable-moored platform impacted by floes of annual ice.**

Matsuishi, M., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.561-568, 10 refs.

Ettema, R.

**Ice loads, Floating structures, Ice floes, Platforms, Flexural strength, Dynamic loads, Models, Tests, Impact strength, Moorings.**

40-3190

**Impact ice force and pressure: An experimental study with urea ice.**

Sodhi, D.S., et al, MP 2037, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.569-576, 10 refs.

Morris, C.E.

**Ice loads, Ice pressure, Offshore structures, Impact strength, Piles, Velocity, Urea, Experimentation, Compressive properties.**

An experimental study was undertaken of the total force and local pressure generated during the impact of a vertical cylindrical structure against the edge of an ice sheet. The test structure was an instrumented cylindrical pile that protruded under a massive ram suspended from two cranes in the form of a bifilar pendulum. Measurements were made of impact velocity, total ice force, and pressure at a point on the pile. The dependence of normalized maximum ice forces with respect to aspect ratio has the same trend as that for the crushing failure of an ice sheet against a vertical structure. The results of this study indicate that the instantaneous maximum pressure can be an order of magnitude higher than the unconfined compressive strength of ice.

40-3191

**Flexural-gravity wave refraction in an ice cover.**

Khrapaty, N.G., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.577-582, 4 refs.

Takhteev, V.A.

**Wave propagation, Water waves, Ice cover effect, Refraction, Gravity waves, Flexural strength, Velocity, Ocean waves, Analysis (mathematics).**

40-3192

**Ice rheology finite element models.**

Brown, T.G., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.583-588, 15 refs.

Cheung, M.S., Bercha, F.G.

**Ice creep, Ice pressure, Offshore structures, Rheology, Ice models, Ice cracks, Strains, Stresses.**

40-3193

**Estimates of sea ice energy expenditure on the sea floor of the Beaufort Sea, Alaska.**

Rearn, D.M., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.589-592, 14 refs.

**Ice scoring, Bottom sediment, Ocean bottom, Sea ice, Ice mechanics.**

40-3194

**Rubble-ice resistance for ships moving with creeping speed.**

Kitazawa, T., et al, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.593-600, 5 refs.

Ettema, R.

**Ice navigation, Ice strength, Ice conditions, Friction, Ships, Velocity.**

40-3195

**Simulation methodology of vessel-ice floes interaction problem.**

Vinogradov, O.C., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.601-606, 6 refs.

**Ice floes, Ships, Ice solid interface, Mathematical models, Computer applications.**

40-3196

**Dynamic loads and response of a ship during continuous ice breaking.**

Matusiak, J.F., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.607-613, 6 refs.

**Ice breaking, Dynamic loads, Ice navigation, Ships, Icebreakers, Analysis (mathematics).**

40-3197

**Response of a floating sea ice sheet to a moving vehicle.**

Takizawa, T., International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.614-621, 13 refs.

**Floating ice, Ice strength, Ice navigation, Ice deformation, Sea ice, Ice sheets, Velocity.**

40-3198

**Ice floe distribution in the wake of a simple wedge.**

Tatinclaux, J.C., MP 2038, International Offshore Mechanics and Arctic Engineering (OMAE) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.622-629, 6 refs.

**Ice breaking, Ice wedges, Ice floes, Sea ice distribution, Icebreakers, Ice strength, Ice cover thickness, Ice models, Ice conditions, Tests.**

Tests in level ice on an idealized icebreaker bow in the shape of a simple wedge were conducted and the floe size distribution in its wake was observed. The ice floe length and ice floe area were found to follow log-normal probability distributions defined by the length average and area average, and corresponding standard deviations.

40-3199

**Study of strength requirements for nozzles of ice transmitting ships.**

Laakow, V., et al, International Offshore Mechanics and Arctic Engineering (OMA) Symposium, 5th, Tokyo, Apr. 13-18, 1986. Proceedings, Vol.4, New York, American Society of Mechanical Engineers, 1986, p.630-637, 4 refs.

Bayly, I.M., Ghoneim, G.A.

**Ice navigation, Ice loads, Ice pressure, Icebreakers, Strength, Design.**

40-3200

**Ultrasonic attenuation in ice crystals.**

Tamura, J., et al, *Japanese journal of applied physics*, 1982, 21(Suppl. 21-3), p.95-97, 16 refs.

Hiki, Y.

**Ultrasonic tests, Ice crystals, Attenuation, Impurities, Ions, Temperature effects.**

40-3201

**Monitoring of snow covered area using satellite data.**

Ochiai, H., et al, *Advances in earth oriented applications of space technology*, 1981, 1(4), p.181-191, 4 refs.

Takeda, K.

**Snow cover distribution, Remote sensing, Snow surveys, Snowfall, Snow depth, Monitors, Mountains, LANDSAT, Japan.**

40-3202

**Vapor drive maps of the U.S.A.**

Tobiasson, W., et al, MP 2041, Hanover, NH, Cold Regions Research and Engineering Laboratory, (1986), 7p. + graphs, 9 refs. Presented at the ASHRAE/DOE/BTECC Conference "Thermal Performance of the Exterior Envelopes of Buildings III", Clearwater Beach, FL, Dec. 1985.

Harrington, M.

**Thermal insulation, Condensation, Moisture, Water vapor, Maps, Buildings, Meteorological factors, Design criteria, Seasonal variations.**

The thermal performance of most insulations used in building envelopes will be seriously degraded if the insulation becomes wet. Problematic moisture can come from within the building envelope. Guidance on when to use "air-retarders" needs improvement. As a step in this direction, weather records have been analyzed and two series of maps have been made that relate the relative humidity within a building to the vapor pressure gradients across the building envelope. Each map in the first series is for a specific ratio of cold weather wetting potential to warm weather drying potential. Each map in the second series is for a specific cold weather wetting potential.

40-3203

**Roof moisture surveys: yesterday, today and tomorrow.**

Tobiasson, W., et al, MP 2040, International Symposium on Roofing Technology, 1985. Proceedings. A decade of change and future trends in roofing, Chicago, IL, National Roofing Contractors Association, (1985), p.438-443 + figs., 45 refs.

Korhonen, C.

**Roofs, Moisture detection, Thermal insulation, Condensation, Measuring instruments.**

Roof moisture surveys are conducted with nuclear meters, capacitance meters or infrared scanners. Nuclear meters and capacitance meters take readings at the spots on the roof with points spaced from 5 to 10 feet apart. Nuclear meters sense the amount of hydrogen in the roofing system at each spot. Since most dry roofs contain hydrocarbons, they do not give zero readings. When water also is present on the roof, nuclear readings increase since water is part hydrogen. Capacitance meters create an alternating current electrical field in the roofing system below. When there is water in the roof, its dielectric properties change and the reading on the capacitance meter increases. Capacitance meters do not "see" deeply (a few inches at most) into the roofing system. An infrared scanner senses the temperature of the surface of the roof. Wet insulation changes the ability of the roofing system to store and conduct thermal energy, thereby causing changes in its surface temperature which the infrared scanner can detect. Instead of a meter reading, the infrared results are presented as shades of brightness on a video monitor. This qualitative visual image provides information about every square inch of the roof, but the information is more subjective than the numbers generated at grid points by nuclear or capacitance meters.

40-3204

**Condensation control in low-slope roofs.**

Tobiasson, W., MP 2039, Moisture Control in Building: Workshop proceedings, Sep. 25-26, 1984. Edited by E. Bales and H. Trechsel, Washington, D.C., Building Thermal Envelope Coordinating Council, (1985), p.47-59, 47 refs.

**Roofs, Condensation, Moisture, Vapor transfer, Air flow, Countermeasures, Buildings, Damage, Construction materials, Maintenance.**

Excessive moisture can damage wood, metal, and concrete roof decks, cause bituminous membranes to wrinkle, shrink, split, delaminate and blister and significantly reduce the insulating ability of most roof insulations. Low-sloped wood-frame roofs

with below-deck insulation have encountered a significant number of condensation problems. Few such problems occur for compact membrane roofs without intervening air spaces. Air leakage control probably explains the difference. However, serious condensation problems occur in some compact membrane roofs, particularly in cold regions. For most roofs, upward vapor flow in cold weather is generally exceeded by downward vapor flow in warm weather. Thus, the objective is to install air-vapor retarders to reduce winter wetting to an acceptable level. Ventilation of the space between the membrane and the retarder is also practiced.

40-3205

**Ecology (including physiological aspects) of selected antarctic marine invertebrates associated with in-shore macrophytes.**

Richardson, M.G., Durham, University of Durham, 1978, 165p. + refs. and illus., Ph.D. thesis. 23p. of refs.

**Sea ice distribution, Cryobiology, Antarctica—Signy Island.**

Benthic surveys of Borge Bay, Signy I., showed that the habitat provided by macroalgae is important as a source of food and shelter to a wide variety of benthic and demersal species. The biology of two contrasting invertebrates, the amphipod *Pontogeneia antarctica* and the bivalve *Lissarca miliaris*, was investigated. The mollusc remained in the benthos throughout the year, whilst the crustacean exhibited a major migration to the undersurface of the fast ice during the winter. Despite such obvious ecological differences, some fundamental similarities were apparent in the reproductive biology of these animals. (Auth. mod.)

40-3206

**Utilization of the polar platform of NASA's space station program for operational earth observations.**

McElroy, J.H., et al, *U.S. National Oceanic and Atmospheric Administration. National Environmental Satellite, Data, and Informatic. service. NOAA Technical Report*, Sep. 1984, NESDIS 12, 67p. PB85-15202.

Schneider, S.R.

**Spaceborne photography, Spacecraft, Sea ice distribution.**

40-3207

**Weather observations Wright Valley, Antarctica.**

Bromley, A.M., Wellington, New Zealand Meteorological Service, 1985, 37p., 12 refs.

**Weather observations, Snow, Precipitation (meteorology), Wind (meteorology), Antarctica—Wright Valley, Antarctica—Vanda Station.**

Wright Valley is part of the dry valley system and is substantially free of snow and ice. 1958 marks the start of weather reports from this area with data from Lake Vanda. In 1969 a permanent station was established at Vanda and a general study of climate and heat balance began. Various aspects of snow observations were made, are discussed, and statistical data are reported and assessed. For the snow data from another source see *New Zealand antarctic record*, Vol.6, Special supplement, p.60-68, 1985 (40-3096 or 1-33613). Details are also given of the Föhn westerlies as they blow through various channels and cuts in nearby mountains and down glaciers. Physical features for determining onset times and characteristics and severity of individual westerlies patterns are pointed out.

40-3208

**Study of the ice biota of Frobisher Bay, Baffin Island, 1979-81.**

Grainger, E.H., et al, *Canadian manuscript report of fisheries and aquatic sciences*, Feb. 1982, No.1647, 128p. MICROLOG 82-2004.

Hsiao, S.I.C.

**Algae, Cryobiology, Fast ice, Microbiology.**

40-3209

**Role of frost action on the development of shore platforms: Gaspé, Quebec.**

Rudakas, P.A., Windsor, Ontario, University of Windsor, 1979, 125p., M.A. thesis. Canadian theses on microfiche no. 44472.

**Shoreline modification, Frost action, Freeze thaw tests, Frost weathering, Shore erosion.**

40-3210

**On the contact heat transfer with melting: (1st report: Experimental study).**

Saito, A., et al, *Japan Society of Mechanical Engineers. Bulletin*, June 1985, 28(240), p.1142-1149, 5 refs.

Utaka, Y., Akiyoshi, M., Katayama, K.

**Melting, Heat transfer, Phase transformations, Storage, Heat, Analysis (mathematics).**

40-3211

**On the contact heat transfer with melting: (2nd report: Analytical study).**

Saito, A., et al, *Japan Society of Mechanical Engineers. Bulletin*, Aug. 1985, 28(242), p.1703-1709, 5 refs.

Utaka, Y., Akiyoshi, M., Katayama, K.

**Heat transfer, Melting, Phase transformations, Solids, Analysis (mathematics), Temperature distribution, Storage.**

40-3212

**VIBROSEIS in the Canadian Arctic—a case study.**

Birnie, D., et al, *Canadian Society of Exploration Geophysicists. Journal*, Dec. 1981, 17(1), p.7-23, 5 refs.

Eastwood, F.

**Permafrost physics, Seismic reflection, Acoustics, Explosion effects, Wave propagation, Noise (sound), Measuring instruments.**

40-3213

**Permafrost determination by seismic velocity analyses.**

Hatlelid, W.G., et al, *Canadian Society of Exploration Geophysicists. Journal*, Dec. 1982, 18(1), p.14-22, 6 refs.

MacDonald, J.R.

**Subsea permafrost, Permafrost distribution, Permafrost depth, Permafrost thickness, Seismic surveys, Permafrost forecasting, Seismic refraction, Seismic reflection, Beaufort Sea, Canada—Northwest Territories—Mackenzie River Delta.**

40-3214

**Melting process of ice inside a horizontal cylinder: effects of density anomaly.**

Rieger, H., et al, *Journal of heat transfer*, Feb. 1986, 108(1), p.166-173, 20 refs.

Beer, H.

**Ice melting, Density (mass/volume), Heat transfer, Ice water interface, Phase transformations, Melting points, Temperature effects, Walls, Cylinders.**

40-3215

**USNS Potomac oil spill, Melville Bay, Greenland, August 5, 1977. A joint report on scientific studies and impact assessment by the NOAA-USCG Spilled Oil Research team and the Greenland Fisheries Investigations, Ministry for Greenland.**

Grose, P.L., et al, *U.S. National Oceanic and Atmospheric Administration. Report*, Aug. 1979, NOAA-80031106, 134p., PB80-173 727, 34 refs.

Mattson, J.S., Petersen, H.

**Oil spills, Water pollution, Degradation, Polar regions, Distribution, Environmental impact, Marine biology, Ecology, Greenland—Melville Bay.**

40-3216

**Closed-system freezing of soil in earth dams and canals.**

Jones, C.W., *Canadian geotechnical journal*, Feb. 1986, 23(1), p.1-8. With French summary. 11 refs.

**Soil freezing, Earth dams, Soil compaction, Frost action, Soil water, Channels (waterways), Snow depth, Water content, Tests.**

40-3217

**Early regional photointerpretation and geological studies of landslide terrain along the South Saskatchewan and Qu'Appelle River valleys.**

Mollard, J.D., *Canadian geotechnical journal*, Feb. 1986, 23(1), p.79-83, With French summary. 13 refs.

**Hummocks, Geomorphology, Banks (waterways), Remote sensing, Rivers, Photointerpretation, Landslides, Landforms, Geology.**

40-3218

**New regulations in force for maritime ice service.**

[Neue Anordnung über den Eisdienst in der Seefahrt in Kraft],

Hinrichs, B., et al, *Seewirtschaft*, Dec. 1985, 17(12), p.584-585, In German. 6 refs.

Koch, H.-J.

**Ice navigation, Ice surveys, Icebreakers, Ice conditions, Ice breaking, Weather observations.**

40-3219

**Glacial margins of Austre Lovenbreen glacier, Spitsbergen: a peculiar environment linked to subglacial runoff.**

[Les marges glacées du Loven Est, Spitsberg: un milieu original lié aux écoulements sous-glaciés],

Griselin, M., *Revue de géographie alpine*, 1985, Vol.73, p.389-410, In French with English summary. 8 refs.

**Glacial hydrology, Glacial rivers, Subglacial drainage, Runoff, Ice formation, Mapping, Norway—Spitsbergen.**

40-3220

**ARKTIS III expedition with RV Polarstern 1985.**

[Die Expedition ARKTIS III mit FS Polarstern 1985],

Gersonde, R., ed, *Berichte zur Polarforschung*, Jan. 1986, No.28, 113p., In German, with English summary.

**Icebreakers, Ice breaking, Sea ice, Ocean currents, Oceanographic surveys, Geophysical surveys, Marine biology, Sediments.**

40-3221

Meteorological data of the Georg-von-Neumayer-Station for 1981 and 1982.

Gube-Lenhardt, M., et al, *Berichte zur Polarforschung*, 1986, No.30, 41p., 17 refs.

Obleitner, F.

Meteorological data, Meteorological instruments, Air temperature, Humidity, Wind (meteorology), Snow temperature.

This report describes the meteorological instrumentation at Georg von Neumayer Station for the years 1981 and 1982, explains the data processing and archiving procedures and presents some results of the recordings taken during these two years. Parameters reported include atmospheric temperature, pressure and humidity, firm temperature, cloudiness, wind speed and direction, vertical temperature gradients and surface inversions, global radiation, radiation flux, albedo, and radiation budget. (Auth. mod.)

40-3222

USARP/DF 86 cruise report.

Anderson, J.B., Houston, Texas, Rice University, 1986, 11 leaves, 1 ref.

Marine geology, Seismic surveys, Geologic structures, Bottom topography, Antarctica—Bransfield Strait, Antarctica—Gerlache Strait, Antarctica—Marguerite Bay.

A multi-university scientific party of geologists conducted surveys of the Bransfield Basin, Gerlache Strait, the continental shelf west of Anvers Island, and Marguerite Bay. An account is given of the data collected and a summary of preliminary results is provided. Charts of the cruises are included along with a list of stations where samples were taken. The cover shows coastal shelf areas surveyed from DF 79 through DF 86.

40-3223

Quaternary glaciomarine sedimentation interpreted from seismic surveys of fiords on Baffin Island, N.W.T.

Gilbert, R., *Arctic*, Dec. 1985, 38(4), p.271-280, With French summary. 23 refs.

Glaciation, Marine deposits, Quaternary deposits, Subsea permafrost, Sedimentation, Seismic reflection, Canada—Northwest Territories—Baffin Island.

40-3224

Surface disposal of waste drilling fluids, Ellef Ringnes Island, N.W.T.: short-term observations.

French, H.M., *Arctic*, Dec. 1985, 38(4), p.292-302, With French summary. 21 refs.

Waste disposal, Tundra, Permafrost, Drilling fluids, Soil pollution, Water pollution, Canada—Northwest Territories—Ellef Ringnes Island.

40-3225

Diurnal thermal regime in a peat-covered palisade, Toolik Lake, Alaska.

Nelson, F.E., et al, *Arctic*, Dec. 1985, 38(4), p.310-315, With French summary. 19 refs.

Outcalt, S.I., Goodwin, C.W., Hinkel, K.M.

Frost mounds, Thermal regime, Active layer, Peat, Permafrost thermal properties, Ice cores, Soil temperature, Temperature variations, Diurnal variations, United States—Alaska—Toolik Lake.

40-3226

Heat flow sensors on walls—what can we learn.

Flanders, S.N., *American Society for Testing and Materials. Special technical testing publication*, 1985, No.885, MP 2042, p.140-149, 10 refs.

Thermal insulation, Walls, Heat transfer, Heat flux, Heat loss, Buildings, Accuracy, Thermal conductivity.

This paper addresses the validity of employing heat flow sensors (HFS) on the indoor surfaces of building walls to determine thermal characteristics. It also reports on the results obtained in the field. Some of the factors affecting HFS measurement accuracy (together with a likely percentage standard deviation attributable to that factor) are as follows: (a) the conductivities of HFS and its surroundings (3%), (b) convection mode changing over the sensor, causing a +21% bias (26%), (c) the mismatch of HFS absorptivity with the surroundings (6%), and (d) thermal contact of the HFS with the surface (1%). A propagation-of-errors analysis indicates that the resulting standard deviation of an HFS measurement would be approximately 10% of the mean of the measurements.

40-3227

Electrical surveys in the Alberta foothills.

Duckworth, K., *Canadian Society of Exploration Geophysicists. Journal*, Dec. 1983, 19(1), p.57-66, 20 refs.

Inner ground physics, Soil physics, Electrical properties, Clay soils, Models, Tests, Canada—Alberta.

40-3228

Effect of permafrost on the IP response of lead zinc ores.

Kay, A., et al, *Canadian Society of Exploration Geophysicists. Journal*, Dec. 1983, 19(1), p.75-83, 8 refs.

Duckworth, K.

Permafrost physics, Electrical properties, Minerals, Polarization (charge separation), Temperature effects, Electrical resistivity, Rocks, Tests.

40-3229

Regional meteorology of the Bering Sea during MIZEX (Marginal Ice Zone Experiment) West, February and March, 1983.

Wilson, J.G., et al, *U.S. National Oceanic and Atmospheric Administration. Pacific Marine Environmental Laboratory. Contribution*, Oct. 1984, CONTRIB-729, 115p., PB85-173 599, 6 refs.

Comiskey, A.L., Lindsay, R.W., Long, V.L.

Marine meteorology, Ice conditions, Weather stations, Ice edge, Boundary layer.

40-3230

Climate of large lakes in Siberia. (Klimat bol'shikh ozer Sibiri).

Shotskil, V.P., ed, Novosibirsk, Nauka, 1984, 145p., In Russian with abridged English table of contents enclosed. Refs. p.138-145.

Ladelshechikov, N.P., ed.

Climatic factors, Radiation balance, Environmental protection, Wind factors, Precipitation (meteorology), Lakes, Meteorological charts, Mountains, Thermal regime, Meteorological data, Economic development, Air temperature, Solar radiation.

40-3231

Dynamics of plastid pigment content in pine, in relation to spring fertilizing of the north-taiga lichen forests. (Dinamika soderzhanii plastidnykh pigmentov u sosny v svyazi s vneseniiem udobrenii v severotaezhnykh lishainikovykh borakh).

Konovalov, V.N., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Lesnoi zhurnal*, 1985, No.6, p.18-22, In Russian. 15 refs.

Listov, A.A.

Taiga, Photosynthesis, Plant physiology, Lichens, Plant ecology, Nutrient cycle, Cryogenic soils.

40-3232

Construction of taiga forest roads in freezing weather. (Vozvedenie zemliannogo polotna lesovoznykh dorog v zimnikh usloviakh).

Migliachenko, V.P., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Lesnoi zhurnal*, 1985, No.6, p.38-41, In Russian. 5 refs.

Roadbeds, Cryogenic soils, Taiga, Soil freezing, Earthwork, Excavation, Frozen ground strength, Defrosting, Admixtures, Artificial thawing.

40-3233

Near-surface water circulation in the subarctic frontal zone from satellite data. (O priroverkhnostnoi tsirkulatsii vod v subarkticheskoi frontal'noi zone (po dannym ISZ)).

Ginzburg, A.I., et al, *Issledovanie Zemli iz kosmosa*, Jan.-Feb. 1986, No.1, p.8-13, In Russian with English summary.

Fedorov, K.N.

Spaceborne photography, Subpolar regions, Ocean currents, Turbulence.

40-3234

Determining moisture content of inhomogeneously moistened soils, with surface transition layers, from the data of spectral superhigh frequency measurements. (Opredelenie vlazhnosti neodnorodno uvlazhnennykh pochvognuntov s poverkhnostnym perekhodnym sloem po dannym spektral'nykh SVCh-radiometricheskikh izmerenii).

Reutov, E.A., et al, *Issledovanie Zemli iz kosmosa*, Jan.-Feb. 1986, No.1, p.71-78, In Russian with English summary. 5 refs.

Shutko, A.M.

Remote sensing, Radiometry, Soil water, Moisture detection, Measuring instruments.

40-3235

Problems in studying disperse soils. (Nekotorye problemy izucheniia dispersnykh gruntov).

Osipov, V.I., *Inzhenernaia geologiya*, Jan.-Feb. 1986, No.1, p.17-22, In Russian. 4 refs.

Disperse soils, Soil physics, Clay soils, Thixotropy, Clay minerals, Soil water, Adsorption, Quicksand.

40-3236

Regionalization of the West Siberian Plate according to permafrost structure and thickness. (Regionalizatsiia Zapadno-Sibirskoi plity po kharakteru stroeniia i moshchnosti tolschch mnogoletnemerzlykh porod).

Trofimov, V.T., et al, *Inzhenernaia geologiya*, Jan.-Feb. 1986, No.1, p.65-70, In Russian. 13 refs.

Kudrnashov, V.G.

Mapping, Permafrost distribution, Permafrost thickness, Permafrost structure, Charts.

40-3237

Mapping of permafrost as a method of locating hydrothermally altered rocks and deteriorating structures. (Kartirovanie merzlykh gruntov kak metod obnaruzheniia gidrotermal'no izmenennykh porod i struktur razrusheniia).

Rychagov, S.N., *Inzhenernaia geologiya*, Jan.-Feb. 1986, No.1, p.71-83, In Russian. 40 refs.

Mapping, Permafrost distribution, Permafrost structure, Ice veins, Permafrost transformation, Permafrost thermal properties, Permafrost hydrology, Hydrothermal processes.

40-3238

Modeling of radio wave scattering by ice covers. (Modelirovanie protsessov rasscianiia radiovoln ledovymi pokrovami).

Timchenko, A.I., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Radiofizika*, 1985, 28(7), p.816-822, In Russian. 10 refs.

Sinityn, I.U.A., Efimov, V.B.

Ice physics, Radio waves, Scattering, Ice cover, Roughness coefficient, Attenuation, Mathematical models.

40-3239

Materials for cryogenic wind tunnel testing.

Tobler, R.L., *U.S. National Bureau of Standards. National Measurement Laboratory. Report*, May 1980, NBSIR 79-1624, 128p., N81-74903, NASA CR-165 716, Refs. p.110-128.

Cryogenic structures, Wind tunnels, Airplanes, Low temperature tests, Materials, Tensile properties, Fatigue (materials), Models, Design.

40-3240

Summary of NASA's research on the fluid ice protection system.

Albright, A.E., American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 23rd, Reno, NV, Jan. 14-17, 1985. AIAA paper, (1985), 14p., A85-19768, AIAA 85-0467, 9 refs.

Ice prevention, Aircraft icing, Fluid flow, Wind tunnels, Tests, Ice removal, Flow rate.

40-3241

Results of experimental studies of mechanical properties of ice covers. (Nekotorye rezul'taty eksperimental'nykh issledovaniil mekhanicheskikh svoistv ledianogo pokrova).

Epifanov, V.P., *Akademiia nauk SSSR. Izvestiia. Mekhanika tverdogo tela*, Mar.-Apr. 1985, No.2, p.182-191, In Russian. 28 refs.

Ice physics, Ice cover strength, Tests, Ice mechanics, Experimentation, Tensile properties, Compressive properties, Impact tests, Loading.

40-3242

Operating speeds of snow-and-ice control vehicles.

McDonald, J.M., et al, *U.S. Federal Highway Administration. Engineering Research and Development Bureau. Research report*, Aug. 1983, FHWA/NY/RR-83/106, 41p., PB84-151 281, 5 refs.

Anania, G.L.

Snow removal, Ice removal, Equipment, Velocity, Ice control, Vehicles, Road maintenance, Winter maintenance, Road icing.

40-3243

Winter flow, ice and weather conditions of the upper St. Lawrence River, 1971-81. Volume 3: Water level, discharge and temperature.

Shen, H.T., et al, *Clarkson College of Technology. Potsdam, NY. Dept. of Civil and Environmental Engineering. Report*, July 1982, No.82-4, 182p., PB83-166 280, 2 refs.

Yapa, P.N.D.D.

Ice conditions, Water level, River ice, River flow, Meteorological data, Ice reporting, Ice navigation, Ice models, Statistical analysis, St. Lawrence River.

40-3244

Improving ships for ice navigation. (Uluchshaiia ledovye kachestva sudov).

Faddeev, O., *Morskoi flot*, 1985, No.10, p.39-40, In Russian.

Ice navigation, Icebreakers, Ice pressure, Ice loads, Models.

## 40-3245

**Advanced technology for Arctic ships.** (Arkticheskimi sudam—sovershennuiu tekhnikiy. Volinov, E., *Morskoi flot*, 1985, No.8, p.29-30, In Russian. Ice navigation, Icebreakers, Ice breaking, Ships, Design.

## 40-3246

**Icebreaker trafficability studies.**

Sweet, L.R., *Alaska. Department of Transportation and Public Facilities. Research notes*, Mar. 1986, 5(9), 2p.

**Ship icing, Ice prevention, Icebreakers, Ice navigation, Trafficability, Ice cores.**

## 40-3247

**Vegetation of the Earth and ecological systems of the geo-biosphere.**

Walter, H., Berlin, Springer-Verlag, 1985, 318p., Third revised and enlarged edition. Translated from the 5th revised German edition by O. Muise, "Vegetation und Klimazonen", published by E. Ulmer, Stuttgart, 1984. Refs. p.303-309.

**Vegetation, Plant ecology, Tundra, Forest ecosystem, Forest lines, Geobotanical interpretation, Climatic factors, Polar regions, Mountains.**

## 40-3248

**Lacustrine studies in the mountain region around Untersee.** (Issledovanie ozer gornogo oazisa Untersee).

Klokov, V.D., et al, *Geodätische und geophysikalische Veröffentlichungen*, 1985, Ser.I, No.12, Symposium zur Antarktisforschung der DDR, Garwitz 1984, p.27-32, In Russian with English and German summaries. 2 refs.

Kaup, E.V., Loopmann, A.A.

**Lake ice, Ice cover thickness, Lake water, Hydrogeochemistry, Microbiology, Antarctica—Untersee, Lake.**

In 1983 a first complex investigation of lakes of the Wohlthat Mountains was carried out by Soviet and German scientists from Novolazarevskaya. The two main lakes within the Untersee region were investigated by bathymetric measurements along some profiles. The ice thickness, the vertical temperature distribution and the concentration of dissolved oxygen were studied. The distribution of the water mineralization and the pH values were measured. Samples were collected for determination of nutrient content and concentrations of main ions, heavy metals and oxygen isotopes (O-18). The distribution of chlorophyll and the primary production of phytoplankton were determined by C-14 measurements. The vertical distribution of photoactive radiation (380-710 nm) was noted. Samples of phytoplankton and phytobenthos were conserved for determination of species distribution. Sediment was sampled for chemical analysis. The morphology of the lakes "Untersee" and "Obersee" and some chemical and biological data of fresh-water lakes, glaciers and snow of the oasis are presented in form of tables and figures. (Auth.)

## 40-3249

**Hydrogeochemical studies of lakes and precipitation in the Schirmacher Hills area of Queen Maud Land, East Antarctica.** (Hydrogeochemische Untersuchungen an Seen und Niederschlägen in der Schirmacher-Oase, Königin-Maud-Land, Ostantarktika).

Wand, U., et al, *Geodätische und geophysikalische Veröffentlichungen*, 1985, Ser.I, No.12, Symposium zur Antarktisforschung der DDR, Garwitz 1984, p.33-56, In German with English and Russian summaries. 64 refs.

Hermichen, W.-D., Partisch, M., Zierath, R.

**Lake water, Hydrogeochemistry, Snow composition, Salinity, Lake ice, Antarctica—Schirmacher Hills.**

During the austral summers of 1980/81 and 1981/82 30 lake-water samples and 16 snow samples (fresh atmospheric precipitation) were collected in the Schirmacher Hills and analyzed for their major cationic and anionic contents. Not only the snow samples but also most of the lake waters showed extremely low salt content (a few tens mg/l). Shallow and drainless pools and lakes which are strongly influenced by evaporation processes have higher salt concentrations, up to about 500 mg/l depending on fresh-water inflow, ice-cover thickness and state of concentration (evaporation). The epishelf lakes lying between the oasis and shelf ice are tidal fresh-water lakes. They are hydrogeochemically very similar to seawater. The other lakes of the Schirmacher Oasis represent a wide variety of hydrogeochemical conditions. According to the principal cations and anions the following types of lake water may be classified: Na-Cl, Na-SO<sub>4</sub>, Ca-SO<sub>4</sub>, Ca-HCO<sub>3</sub>, Ca-Cl. (Auth. mod.)

## 40-3250

**Shelf ice moraines as altitude markers in the Schirmacher Hills (Queen Maud Land, East Antarctica).**

(Möränen des Schelfeises als Höhenmarken in der Schirmacher-Oase (Dronning Maud Land, Ostantarktika)).

Hebert, D., et al, *Geodätische und geophysikalische Veröffentlichungen*, 1985, Ser.I, No.12, Symposium zur Antarktisforschung der DDR, Garwitz 1984, p.88-94, In German with English and Russian summaries. 16 refs.

Richter, W.

**Moraines, Altitude, Glacier ice, Ice shelves, Isostasy, Antarctica—Schirmacher Hills.**

Push moraines whose formation is caused by inland ice streams, which flow around the oasis, are widely distributed on the northern slope of the Schirmacher Oasis. The pushing powers of the ice streams are transferred to the shelf ice and by this against the northern edge of the oasis. On the other hand, the distribution of moraines in different altitudes is caused by effective glacial isostatic rise. The indication of raised push moraines of about 125 m above sea-level is in the same order as the recently calculated amount of the postglacial isostatic rise of East Antarctica. It was possible to demonstrate that the relatively high elevation is related to the probability of a long period of ice-free surface of the oasis. The age of the Schirmacher Oasis is assumed to be about 10,000 years. This assumption coincides well with research done by Soviet scientists using records of stratified lake sediments to determine the exact age. (Auth.)

## 40-3251

**Horizontal flow of the Filchner/Ronne Ice Shelf glacier (West Antarctica).** (Horizontales Fließen der Ronne- und Filchner Schelfeisgletscher (Westantarktika)).

Weber, W., et al, *Geodätische und geophysikalische Veröffentlichungen*, 1985, Ser.I, No.12, Symposium zur Antarktisforschung der DDR, Garwitz 1984, p.103-107, In German with English and Russian summaries. 3 refs.

Peukert, K.

**Ice shelves, Glacier ice, Glacier flow, Flow rate, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf.**

Variations in the positions of polar research stations on the Filchner and the Ronne shelf ice show that ice streams of the shelf ice glacier are flowing with a velocity between 1300 m/y and 1900 m/y. Comparing locations of the recent ice front with those of older maps shows flow velocities up to 2400 m/y for the last twenty years. Direction and velocity of drift contribute to the variations. (Auth.)

## 40-3252

**Seasonal and interannual sea ice variations in the Weddell Sea 1973-1983.** (Jahreszeitliche und interannuelle Meereisvariationen in der Region Weddellmeer von 1973 bis 1983).

Gernandt, H., et al, *Geodätische und geophysikalische Veröffentlichungen*, 1985, Ser.I, No.12, Symposium zur Antarktisforschung der DDR, Garwitz 1984, p.108-122, In German with English and Russian summaries. 16 refs.

Drescher, K.

**Sea ice distribution, Ice air interface, Ice water interface, Air temperature, Polynyas, Antarctica—Weddell Sea, Antarctica—Halley Bay Station, South Georgia.**

Regular satellite observations of 10 years from 1973 to 1983 over the Atlantic sector give qualitative results about the interannual variations of sea ice cover in the Weddell Sea region. It is shown that characteristic anomalies such as the Weddell polynya appear periodically and very strongly influence variations in sea ice cover. Comparison between annual mean temperatures at Grytviken and Halley Bay permits qualitative conclusions on interactions of the system ocean-sea ice-atmosphere. The immediate influence on sea ice distribution of a special event is discussed. (Auth.)

## 40-3253

**Development rhythms and stability of woody plants at low temperatures.** (Ritm razvitiia i ustoychivost' drevesnykh rastenii k nizkim temperaturam).

Smirnov, I.A., *Moscow. Glavnyi botanicheskii sad. Biulleten'*, 1985, Vol.136, p.21-25, In Russian. 10 refs.

**Introduced plants, Plant ecology, Frost resistance, Plant physiology, Ecosystems, Seasonal freeze thaw, Deserts, Frost action.**

## 40-3254

**Ice shelves of Antarctica.**

Barkov, N.I., New Delhi, Amerind, 1985, 262p., For Russian original see 6F-10768. Refs. p.231-262. DLC GB 2597.B313

**Ice shelves, Ice accretion, Ice structure, Ice thermal properties, Rheology.**

A summary of data on the antarctic shelf ice published by Soviet and non-Soviet scientists up to 1968 is presented in 9 chapters. (1) Brief history of research; (2) conditions for existence, (3) morphology; (4) accumulation; (5) structure; (6) temperature

regime; (7) movement; (8) present conditions and development of shelf ice in the past; and (9) classification.

## 40-3255

**Antarctica; notes on geography, economics and natural environment.** (L'Antartide, Notizie geografiche, economiche, naturalistiche). Desio, A., ed, Turin, Unione Tipografico-Editrice Torinese, [1983], 248p., In Italian. Refs. passim.**Sea ice, Ice sheets, Glaciers.**

The 9 chapters of this book, and their respective introductions, were written by the participants in the Round Table Meeting on Antarctica, held by the Italian Geographic Society on Mar. 8, 1980. The reviews cover, in a general way, the history of antarctic exploration, antarctic geography, economic research and climate, gravimetric, seismic and magnetic investigations, the antarctic ocean, geology, terrestrial and marine ecology, and politico-legal aspects, particularly those concerning territorial claims of the signatories of the Antarctic Treaty. The latter is reproduced in its entirety, in English, in the book's appendix. A detailed map of Antarctica and its surrounding oceans is included.

## 40-3256

**Cold Weather Transit Technology Program. Vol.2: Transit system survey.**

Albach, W.C., et al, *U.S. Urban Mass Transportation Administration. Report*, May 1983, UMTA-IN-06-0009-83-2, 18p. PB83-219 527.

Koonce, B.L., Randolph, D.G., Jr.

**Ice accretion, Motor vehicles, Cold weather operation, Railroad tracks, Freezing, Snow accumulation, Traction.**

## 40-3257

**Cold Weather Transit Technology Program. Vol.3: Investigation of the high incidence of rail pull aparts on continuous welded rail.**

Elizondo, Y.J., et al, *U.S. Urban Mass Transportation Administration. Report*, May 1983, UMTA-IN-06-0009-83-3, 54p. + appendix, PB83-218 263, 13 refs.

Duvall, R.E.

**Railroad tracks, Welding, Temperature effects, Ultrasonic tests, Cracking (fracturing), Cold weather performance.**

## 40-3258

**Cold Weather Transit Technology Program. Vol.4: Investigation of rail heater reliability.**

Payne, J.N. *U.S. Urban Mass Transportation Administration. Report*, Nov. 1983, UMTA-IN-06-0009-83-4, 57p. PB84-155 381.

**Railroad tracks, Ice prevention, Heating, Ice control, Snow removal, Ice removal.**

## 40-3259

**Cold Weather Transit Technology Program. Vol.5: Third rail deicing system research.**

Larson, A.R., Jr., *U.S. Urban Mass Transportation Administration. Report*, Nov. 1983, UMTA-IN-06-0009-83-5, 120p., PB84-159 987, 2 refs.

**Ice prevention, Railroad tracks, Ice removal, Snow removal, Hydraulic jets, Heating, Tests.**

## 40-3260

**Cold Weather Transit Technology Program. Vol.6: Winterization of self-ventilated traction motors on rapid transit vehicles.**

Koonce, B.L., *U.S. Urban Mass Transportation Administration. Report*, Nov. 1983, UMTA-IN-06-0009-83-6, 144p., PB84-136 753, 5 refs.

**Ice prevention, Engines, Motor vehicles, Railroad tracks, Snow removal, Cold weather operation, Ventilation, Tests, Ice formation, Ice melting, Design.**

## 40-3261

**Cold Weather Transit Technology Program. Vol.7: Track switch deicing system research.**

Lawson, S.J., Jr., et al, *U.S. Urban Mass Transportation Administration. Report*, Nov. 1983, UMTA-IN-06-0009-83-7, 65p. + appendix, PB84-155 407.

Barrilleaux, H.P., Randolph, D.G.

**Heating, Railroad tracks, Ice prevention, Snow removal, Ice removal, Climatic factors, Tests.**

## 40-3262

**Cold Weather Transit Technology Program. Vol.8: Bus wheel housing deicing project.**

Payne, J.N., et al, *U.S. Urban Mass Transportation Administration. Report*, Nov. 1983, UMTA-IN-06-0008-8, 39p., PB84-137 462, 2 refs.

Lawson, S.J., Jr., Barrilleaux, H.P.

**Ice prevention, Vehicle wheels, Cold weather operation, Ice removal, Snow removal, Design.**

- 40-3263**  
Cold Weather Transit Technology Program. Vol.10: Composite rail and associated surface phenomenon. Miller, A.E., et al. *U.S. Urban Mass Transportation Administration. Report*, Nov. 1984, UMTA-IN-06-0009-83-10, 118p., PB86-120 037, Refs. passim.  
Day, M.S., Zeller, M.V.  
Ice physics, Railroad tracks, Ice adhesion, Ice solid interface, Ice prevention, Surface properties, Metals, Spectroscopy.
- 40-3264**  
Cold Weather Transit Technology Program. Vol.11: Prediction of ice formation. McComas, S.T., et al. *U.S. Urban Mass Transportation Administration. Report*, Nov. 1983, UMTA-IN-06-0009-83-11, 78p., PB84-159 995, 6 refs.  
Uhran, J.J., Flentz, J.L., Ham, A.E.  
Ice formation, Ice detection, Ice forecasting, Ice electrical properties, Meteorological data, Humidity, Condensation, Freezing, Precipitation (meteorology), Experimentation.
- 40-3265**  
Cold Weather Transit Technology Program. Vol.14: RF coupling to complex geometric shapes. Kwor, R.Y.C., et al. *U.S. Urban Mass Transportation Administration. Report*, Jan. 1984, UMTA-IN-06-0009-83-14, 80p. + appends., PB85-103 794, 5 refs.  
Gajda, W.J., Jr.  
Ice prevention, Railroad tracks, Icing, Radio waves, Ice melting, Ice control, Ice removal, Snow removal.
- 40-3266**  
Cold Weather Transit Technology Program. Vol.15: Modeling and analyses of thermal conduction in several ice melting problems. Strieder, W.C., et al. *U.S. Urban Mass Transportation Administration. Report*, Nov. 1983, UMTA-IN-06-0009-83-15, 27p., PB84-138 957, 14 refs.  
Jayaram, B.S.  
Ice melting, Thermal conductivity, Heat transfer, Ice removal, Ice solid interface, Models, Boundary value problems.
- 40-3267**  
Cold Weather Transit Technology Program. Vol.16: Modeling of ice fracture. Lee, L.H.N., et al. *U.S. Urban Mass Transportation Administration. Report*, Nov. 1983, UMTA-IN-06-0009-83-16, 158p., PB84-155 399, Refs. passim.  
Huang, N.C., Ettestad, K., Liu, K.H., Liu, C.H.  
Ice cracks, Railroad tracks, Ice removal, Fracturing, Ice strength, Hydraulic jets, Models, Stresses, Design, Analysis (mathematics).
- 40-3268**  
Cold Weather Transit Technology Program. Vol.17: Tasks status and continuation recommendations. Berry, W.B., ed. *U.S. Urban Mass Transportation Administration. Report*, June 1985, UMTA-IN-06-0009-83-17, 209p., PB86-130 606, Refs. passim.  
Randolph, D.G., ed.  
Cold weather performance, Ice detection, Ice removal, Heat transfer, Ice prevention, Snow removal, Ice physics, Meteorological factors, Models, Tests.
- 40-3269**  
Snow in the construction of ice bridges. Coutermarsh, B.A., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1985, SR 85-18, 12p., ADA-163 118, 6 refs.  
Phetteplace, G.  
Ice crossings, Military operation, Snow (construction material), Snow cover effect, Surface properties, Ice surface, Ice cover strength.  
Snow's contribution as a wearing surface, leveling material or reinforcement to ice bridges is discussed. It is shown that it has limited value as a reinforcement and then only by adding water and freezing the resulting slurry. Snow can be used effectively as either a leveling or wearing surface but natural ice thickening is inhibited by the insulating property of the snow. The snow should be of uniform depth and not mounded or windrowed to avoid deflecting the ice away from the water surface. This would substantially weaken the carrying capacity of the ice bridge.
- 40-3270**  
Description of the building materials data base for New Haven, Connecticut. Merry, C.J., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1985, SR 85-19, 129p., ADA-166 457, 13 refs.  
LaPodin, P.J.  
Construction materials, Chemical properties, Sampling, Damage, Statistical analysis, Computer applications, Precipitation (meteorology), Environmental protection.  
A building material sampling program for the New Haven, Connecticut, region was conducted in March and April of 1984 to examine the type and amounts of building surface materials exposed to acid deposition. A stratified, systematic, unaligned random sampling approach was used to generate sample points across the five sampling frame areas. At least 107 sample points were examined per sampling frame to yield a total sample size of 576 points. Building sizes, surface materials, roof characteristics, roof-mounted apparatus, chimneys, gutters, downspouts, fences and miscellaneous outdoor accessories were recorded. This report provides an initial summary of the data collected. Sample sizes indicate that additional sampling is required to produce the desired 70 sites (with buildings) per frame.
- 40-3271**  
Potential of remote sensing in the Corps of Engineers dredging program. McKim, H.L., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1985, SR 85-21, 42p., ADA-166 334, Refs. p.23-37.  
Klemas, V., Gatto, L.W., Merry, C.J.  
Dredging, Remote sensing, Aerial surveys, Channels (waterways), Sediment transport, Suspended sediments, Environmental impact.  
The potential of remote sensing in the Corps of Engineers Dredging Program for providing data on channel surveys, sediment drift and dispersion during dredging, water quality and suspended sediment concentrations, and selection of disposal sites and monitoring environmental effects at disposal sites was reviewed. The recommended remote sensor combination for recording dredging and environmental changes was a small, single-engine aircraft equipped with at least two 70-mm or 35-mm cameras. The first camera should be loaded with color film and the second camera with color infrared film for vegetation or land use mapping, or panchromatic film with special filters for water studies. For bathymetric mapping, the cameras will have to be supplemented by airborne impulse radar or laser profilers, and possibly sonar depth finders. A combination of small aircraft and boats is optimum for mapping currents and observing prime dynamics.
- 40-3272**  
Comparison of extraction techniques and solvents for explosives residues in soil. Jenkins, T.F., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1985, SR 85-22, 10p., ADA-166 474, 11 refs.  
Brett, D.C.  
Soil chemistry, Explosives, Soil pollution, Ultrasonic tests, Chemical analysis.  
Extraction of TNT, TNB, RDX and HMX from two soils was studied in terms of process kinetics and recovery. Two solvents, acetonitrile and methanol, and four extraction techniques, Soxhlet, ultrasonic bath, mechanical shaker and homogenizer-sonicator were compared. The results were complex in that some interactions among analyte, method and solvent were found. Acetonitrile was found to be clearly superior to methanol for RDX and HMX. Soxhlet and ultrasonic bath generally recovered more than homogenizer or shaker, although a complicating factor is that all techniques were not necessarily at equilibrium. In terms of sample throughput, the ultrasonic bath and shaker are preferred over Soxhlet and homogenizer-sonicator. The ultrasonic bath generally approached equilibrium more rapidly than the shaker so it appears to be the best overall choice. Another complicating factor is that times to reach equilibrium were different for the two soils and for the different analytes. This points to the need for more kinetic studies on other soils and sediments.
- 40-3273**  
Ice-coring augers for shallow depth sampling. Rand, J.H., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1985, CR 85-21, 22p., ADA-166 630, 12 refs.  
Mellor, M.  
Augers, Ice coring drills, Permafrost, Frozen ground, Ice sampling, Drilling, Equipment.  
The development of lightweight coring augers for ice is reviewed. Emphasis is on equipment designed by the Cold Regions Research and Engineering Laboratory and its predecessor organizations for sampling to depths less than 20 m or so. Design and operation of the ACFEL/SIPRE/CRREL 3-in-ID corer is discussed, and modifications of the basic design for powered operation and for drilling in frozen soil are outlined. Recent replacements for the traditional coring auger are described, and details are given for the construction and operation of the new 4 1/4-in-ID coring equipment. A powered 12-in-ID drill for shallow-depth coring is also described.
- 40-3274**  
Level ice breaking by a simple wedge. Tatinclaux, J.C., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1985, CR 85-22, 46p., ADA-166 629, 6 refs.  
Ice breaking, Icebreakers, Ice floes, Ice friction, Ice loads, Loads (forces), Ice models, Ice physics, Tests.  
Tests in level ice on an idealized icebreaker bow in the shape of a simple wedge were conducted in the test basin. The horizontal and vertical forces on the wedge were measured, and floe size distribution in the wake of the wedge was observed. From the force measurements, the ice wedge/hull friction factor was calculated and in general agreement with the friction factor measured in separate friction tests. The ice floe length and ice floe area measured in the current study followed log-normal probability distributions defined by the length average and area average and corresponding standard deviations S(L) and S(A).
- 40-3275**  
Question of Sound from Icebreaker Operations: proceedings of a workshop, 23 and 24 February 1981 at Toronto. Peterson, N.M., ed. Calgary, Alberta, Arctic Pilot Project, 1981, 350p., Refs. passim.  
Sound transmission, Underwater acoustics, Icebreakers, Ice cover effect, Sound waves, Noise (sound), Meetings, Animals.
- 40-3276**  
Sea ice climatic atlas: Volume I Antarctic. U.S. Naval Oceanography Command Detachment, Asheville, NC, *U.S. Naval Air Systems Command. Report*, May 1985, NAVAIR 50-1C-540, 132p.  
Joint Ice Center.  
Sea ice distribution, Climatology, Charts, Antarctica.  
This atlas, measuring 56cm x 43cm, presents summaries of five parameters of sea ice coverage. It is derived from 521 weekly Joint Ice Center (JIC) sea ice analyses produced from 1973-1982. 98% of the raw data used in the study came from all weather passive microwave imagery from satellite instrumentation; other sources were shore station reports, ship reports, and aerial reconnaissance. The data are digitized, located at predetermined grid points, and stored in a standardized format. Groups of charts are composited over a semi-monthly period centered on the 1st and 15th days of each month. Composite classifications are: Maximum, mean, and minimum ice edges; probability of occurrence of any ice; mean ice concentration; mean ice concentration when ice is present; and maximum, mean, and minimum extent of 5/10 or more ice coverage. Tables, chart details, and text explain the analyses and interpretations; define the composite classifications; and show ice coverage in various sectors of antarctic waters.
- 40-3277**  
Making the permafrost regions suitable for living. [Obzhivaia merzlotuj, Mel'nikov, P.I., et al. Moscow, Sovetskaja Rossiia, 1984, 41p., In Russian with abridged English table of contents enclosed.  
Il'mina, T.E.  
Permafrost forecasting, Permafrost distribution, Permafrost beneath structures, Permafrost thermal properties, Permafrost hydrology, Permafrost transformation, Water supply, Permafrost control, Permafrost physics, Thermokarst.
- 40-3278**  
Recultivation of disturbed lands in the North. [Rekul'tivatsiia narushennykh zemel' na Severe, Kriuchkov, V.V., Priroda, July 1985, No.7, p.68-77, In Russian. 6 refs.  
Tailings, Revegetation, Soil erosion, Mining, Cryogenic soils, Excavation.
- 40-3279**  
Electrokinetic generation of electromagnetic fields during ice deformation. [Elektrokineticheskiĭ mekhanizm vzbuzhdeniia elektromagnitnogo polia pri deformatsii l'daj, Stepaniuk, I.A., et al. Khidrologiia i meteorologiia, 1984, 33(6), p.3-8, In Russian with English summary. 9 refs.  
Mikhnevskii, N.D.  
Plates, Ice physics, Glacier ice, Sea ice, Porous materials.
- 40-3280**  
Application of the frequency distribution method to the analysis of atmospheric ice nuclei. [Opyt primeneniia v analize atmosferykh ledianykh iader metoda chastotnykh raspredelenii, Vychuzhanina, M.V., et al. Khidrologiia i meteorologiia, 1984, 33(5), p.29-36, In Russian with English summary. 8 refs.  
Air pollution, Aerosols, Ice nuclei, Condensation nuclei.

- 40-3281**  
Methods of studying snow cover in mountain expeditions. (Vyrkhu metodikata na ekspeditsionnitate izsledovaniia na snezhnata pokrivka v planinitse). Gerasimov, S., et al, *Khidrologiia i meteorologiia*, 1984, 33(1), p.41-44, In Bulgarian. 14 refs.
- 40-3282**  
Alpine landscapes, Snow cover distribution, Snow surveys.
- 40-3283**  
Biophysics and biochemistry at low temperatures. Franks, F., Cambridge, University Press, 1985, 210p., Refs. p.194-205.
- 40-3284**  
Cryobiology, Ice crystal growth, Ice crystal nuclei, Cold tolerance, Solutions, Freezing, Cold weather survival.
- 40-3285**  
Ice island calvings and ice shelf changes, Milne Ice Shelf and Ayles Ice Shelf, Ellesmere Island, N.W.T. Jeffries, M.O., *Arctic*, Mar. 1986, 39(1), p.15-19, 15 refs., With French summary.
- 40-3286**  
Ice islands, Ice shelves, Calving, Ice growth, Ice cover thickness, Aerial surveys, Photography.
- 40-3287**  
Permafrost distribution, zonation and stability along the Eastern Ranges of the Cordillera of North America. Harris, S.A., *Arctic*, Mar. 1986, 39(1), p.29-38, 47 refs., With French summary.
- 40-3288**  
Permafrost distribution, Permafrost thermal properties, Snow depth, Soil water, Mountains, Air masses, Alpine glaciation, United States, Canada.
- 40-3289**  
Research activities on the forest line in Northern Finland. Kallio, P., et al, *Arctic*, Mar. 1986, 39(1), p.52-58, 40 refs., With French summary.
- 40-3290**  
Forest lines, Ecosystems, Tundra, Forestry, Climatic changes, Mountains, Vegetation, Finland.
- 40-3291**  
Modification by an ice cover of the tide in James Bay and Hudson Bay. Godin, G., *Arctic*, Mar. 1986, 39(1), p.65-67, 8 refs., With French summary.
- 40-3292**  
Ice cover effect, Tides, Water level, Canada—Hudson Bay.
- 40-3293**  
Survey of vegetated areas and muskox populations in east-central Ellesmere Island. Henry, G., et al, *Arctic*, Mar. 1986, 39(1), p.78-81, 16 refs., With French summary.
- 40-3294**  
Freedman, B., Svoboda, J., Vegetation, Ecology, Animals, Ice cover, Distribution, Canada—Northwest Territories—Ellesmere Island.
- 40-3295**  
Study of the agreement between the classical technique of granulometry and the modern one of microgranulometry. (Etude de raccord entre les techniques: classiques de granulométrie et microgranulométrie). Lebre, P., et al, *Centre de géomorphologie de Caen. Bulletin*, Sep. 1985, No.30, p.7-22, In French with English summary. 15 refs.
- 40-3296**  
Levant, M., Dupont, J.P., Lafitte, R., Loess, Soil structure, Microstructure, Grain size.
- 40-3297**  
Frost heaving of small rocks by ice lenses: triggering role of cryodesiccation. (Soulèvement cryogénique de petites pierres par la glace en lentilles, rôle initiateur de la cryodesiccation). Van Vliet-Lanoe, B., et al, *Centre de géomorphologie de Caen. Bulletin*, Sep. 1985, No.30, p.77-83, In French with English summary. 17 refs.
- 40-3298**  
Dupas, A., Coutard, J.P., Frost heave, Rocks, Ice lenses, Geocryology, Desiccation, Soil freezing, Frost resistance, Cracking (fracturing).
- 40-3299**  
Vars Crest, High Alps; utilization of thermal data. (La crête de Vars (Hautes-Alpes); exploitation de données thermiques). Coutard, J.P., *Centre de géomorphologie de Caen. Bulletin*, Sep. 1985, No.30, p.85-98, In French with English summary. 3 refs.
- 40-3300**  
Frost shattering, Alpine glaciation, Freeze thaw cycles, Mountains, Statistical analysis, Thermal regime, Air temperature, Temperature effects, Weather stations.
- 40-3301**  
Variations of the temperature field in a natural rocky cliff; as seen in the Vars Crest. (Evolution du champ de température dans une paroi rocheuse naturelle: le cas de la crête de Vars). Manté, C., *Centre de géomorphologie de Caen. Bulletin*, Sep. 1985, No.30, p.99-139, In French with English summary. 9 refs.
- 40-3302**  
Soil temperature, Rocks, Geomorphology, Mountains, Temperature variations, Analysis (mathematics).
- 40-3303**  
Experiences with alarm apparatus for sheet ice of the province Westfalen-Lippe. (Erfahrungen mit Glatteismeldegeräten beim Landschaftsverband Westfalen-Lippe). Kutter, M., et al, *Strasse und Autobahn*, Dec. 1985, 36(12), p.498-503, In German. 5 refs.
- 40-3304**  
Niebrügge, L., Road icing, Warning systems, Ice forecasting, Weather forecasting.
- 40-3305**  
When snow falls in a small town. Quinn, B., et al, *American city and county*, Apr. 1986, 101(4), p.60-67, Includes 2 additional articles: Millcreek creates zoning plan for efficient snow removal, by K.L. Stone; and High point fights ice south of the snowbelt, (anon.).
- 40-3306**  
Snowfall, Snow removal, Ice removal, Road icing, Salting, Forecasting, Chemical ice prevention.
- 40-3307**  
Stochastic models and predictability of some oceanological processes. Prival'skiĭ, V.E., *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, July 1983, 18(12), p.985-987, Translated from its *Izvestiia. Fizika atmosfery i okeana*. 8 refs.
- 40-3308**  
Sea ice distribution, Sea water, Surface temperature, Mathematical models.
- 40-3309**  
One-dimensional model of the atmosphere as a block of the ocean-atmosphere-ice climatic system. Verbitskiĭ, M.I.A., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983, 18(10), p.781-785, Translated from its *Izvestiia. Fizika atmosfery i okeana*. 8 refs.
- 40-3310**  
Chalikov, D.V., Climatic changes, Ice air interface, Ice water interface, Atmospheric circulation, Sea water, Heat transfer, Moisture transfer, Mathematical models.
- 40-3311**  
Lidar identification of droplet and crystalline clouds. Samokhvalov, I.V., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983, 18(10), p.809-813, Translated from its *Izvestiia. Fizika atmosfery i okeana*. 16 refs.
- 40-3312**  
Shamanaev, V.S., Lasers, Ice physics, Ice crystals, Radar echoes, Aerosols, Cloud physics, Cloud droplets, Supercooled clouds, Polarization (waves).
- 40-3313**  
Nuclear-physics method of determining density and salinity of sea ice. Filipov, E.M., *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983, 18(10), p.835-838, Translated from its *Izvestiia. Fizika atmosfery i okeana*. 14 refs.
- 40-3314**  
Gamma irradiation, Sea ice distribution, Remote sensing, Ice density, Ice salinity, Scattering, Measuring instruments.
- 40-3315**  
Radiation properties of ice clouds. Pavlova, L.N., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983, 18(10), p.318-319, Translated from its *Izvestiia. Fizika atmosfery i okeana*. 10 refs.
- 40-3316**  
Petrushin, A.G., Tarasova, T.A., Cloud droplets, Radiation, Scattering.
- 40-3317**  
Glaciers as climate indicators. Kotliakov, V.M., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983, 18(10), p.936-946, Translated from its *Izvestiia. Fizika atmosfery i okeana*. 37 refs.
- 40-3318**  
Krenke, A.N., Glacier ice, Mountain glaciers, Ice temperature, Climatic changes, Ice composition, Impurities, Heat transfer, Mass transfer.
- 40-3319**  
Fundamentals of glaciological forecasting. (Osnovy glatsiologicheskogo prognoza). Kotliakov, V.M., et al, *Akademiia nauk SSSR. Izvestiya. Seria geograficheskaja*, July-Aug. 1985, No.4, p.5-17, In Russian. 18 refs.
- 40-3320**  
Diurgerov, M.B., Krenke, A.N., Ice sheets, Glacier ice, Ice forecasting, Oxygen isotopes, Snow accumulation, Glacier mass balance, Antarctica—East Antarctica.
- 40-3321**  
Methods and prospects for global and regional glaciological forecasting are reviewed on the basis of some 200 scientific papers published on the subject in the last 10 years. Charts from glaciological studies along the Pionerskaya-Dome C route in 1977-1982, showing snow cover density and thickness, are presented and discussed, along with charts showing 10-50 m oxygen-isotope profiles from ice cores obtained at Vostok Station. Surface velocities of glacier motion and mass balance computations are also shown.
- 40-3322**  
Sedimentation processes on the antarctic continental margin at Kapp Norvegia during the Late Pleistocene. Grobe, H., *Geologische Rundschau*, 1986, 75(1), p.97-104, With German, French and Russian summaries. 20 refs.
- 40-3323**  
Polynyas, Pack ice, Ice cores, Ice shelves, Ice composition, Paleoclimatology, Antarctica—Weddell Sea. Sedimentological analyses concerning ice rafted debris, grain size distribution, biogenous components, and clay mineral composition of four sediment cores from the antarctic continental margin off Cape Norvegia reveal a cyclical pattern of three different sediment facies. These are classified into warm and cold types representing warm and cold climatic periods and a short transition period from cold to warm events. The sedimentological parameters reflect the variations within the cryosphere and the hydrosphere, which are directly influenced by the climatic fluctuations. The unusually high content of carbonaceous planktonic and benthonic foraminifera in these polar sediments, as well as the interfingering of terrigenous and biogenous-rich sediments with increasing distance from the continent, might reflect the influence of the Weddell Sea Polynya and the oscillations of polynya, pack ice and ice shelf extent during the late Pleistocene. (Auth.)
- 40-3324**  
Preliminary investigations of mine detection in cold regions using short-pulse radar. Arcone, S.A., *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1985, SR 85-23, 16p., ADA-166 401, 10 refs.
- 40-3325**  
Detection, Snow cover effect, Radar echoes, Mines (ordnance), Dielectric properties, Frozen ground physics, Polarization (waves), Polar regions.
- 40-3326**  
Short-pulse radar is being investigated as a tool for detecting mines in cold regions. The specific problem is the detection of mines buried in a snowpack characterized by a dielectric constant. In this preliminary investigation air and frozen sand are used to roughly approximate the dielectric extremes of a dry snowpack. The radar signal used had a duration of 3-4 ns and a broad frequency spectrum centered near 800 MHz. The responses of mines suspended in air were first recorded as a function of polarization and orientation. Mine responses were then recorded for emplacement in a fairly homogeneous dielectric of frozen sand. The waveform amplitudes depended strongly on mine orientation and weakly on polarization. Resonances in air at all orientations and polarizations for a particular mine type were similar. Responses in the sand were easily recognizable for an antenna standoff of 1 m, but depended on target size. Investigations in a snowpack are now beginning.
- 40-3327**  
Regression models for predicting building material distribution in four northeastern cities. Merry, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1985, SR 85-24, 50p., ADA-166 335, 12 refs.
- 40-3328**  
LaPotin, P.J., Construction materials, Buildings, Polar regions, Models, Distribution.
- 40-3329**  
The Corps of Engineers conducted a field sampling program for inventorying building materials in the northeastern United States, and the data from the field program were compiled into a data base for statistical analysis. Correlation coefficients were derived between the independent variables and the surface area of the five building material types. The correlation coefficients were used in an optimal stepwise regression model developed for each material class for each city. A number of factors appear to be significantly associated with the distribution of building material exposure. However, the variables do not correlate at levels required for constructing adequate predictive models that would be applicable to other sampling locations.
- 40-3330**  
Blasting and blast effects in cold regions. Part 1: Air blast. Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1985, SR 85-25, 62p., ADA-166 315, 23 refs.
- 40-3331**  
Blasting, Explosion effects, Shock waves, Attenuation, Analysis (mathematics), Polar regions, Aerial explosions.
- 40-3332**  
Air blast phenomena are reviewed and a digest of data is given, mainly in graphical form. To the extent possible, correspond-

ing data are given for air blast in cold regions, provided that the prevailing conditions are significantly different from those of temperate regions.

40-3305

**USACRREL precise thermistor meter.**

Trachier, G.M., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1985, SR 85-26, 34p., ADA-166 470, 4 refs.

Morse, J.S., Daly, S.F.

**Frazil ice, Water temperature, Thermistors, Ice formation, Measuring instruments, Accuracy.**

To facilitate the study of frazil ice in the field, a highly accurate, portable water temperature meter was required. The USACRREL Precise Thermistor Meter was designed and built to meet this need. The meter is rugged, battery-operated, waterproof, and able to operate over a wide range of ambient temperatures. A unique feature of this instrument is the use of software to compensate for temperature-dependent variation in the analog electronics. The circuitry consists of an analog printed circuit board and a low power microcomputer. The resistance of a calibrated thermistor is determined and its temperature calculated using the Steinhart-Hart equation. The accuracy of the meter was determined both theoretically and in cold room tests. The hardware and software used in the meter are described.

40-3306

**Review of antitank obstacles for winter use.**

Richmond, P.W., *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1984, CR 84-25, 12p., ADB-100 767L, 24 refs.

**Tanks (combat vehicles), Detonation waves, Military operation, Snow cover effect, Ice cover effect, Boreholes, Models, Drilling, Augers, Barriers.**

This report is a review of information, equipment and procedures related to the use of antitank obstacles in winter. Demolition and construction of expedient and existing obstacles are discussed. Obstacle performance models are identified and their methodology is discussed. Five tasks are identified as areas requiring further research: 1) investigation of the use of light-weight augers for drilling bore holes in frozen soil, 2) investigation of the effectiveness of Soviet-style snow obstacles, 3) development of a model of vehicle performance on snow-covered slopes, 4) development of a design procedure and performance model for step-type obstacles when snow covered, and 5) development of construction procedures for creating ice slopes.

40-3307

**Large-size coaxial waveguide time domain reflectometry unit for field use.**

Delaney, A.J., et al. *IEEE transactions on geoscience and remote sensing*, Sep. 1984, GE-22(5), MP 2048, p.428-431, 10 refs.

Arcone, S.A.

**Frozen ground physics, Ice electrical properties, Dielectric properties, Ground thawing, Wave propagation, Reflection, Measuring instruments.**

A large-diameter open-ended coaxial waveguide has been interfaced with a commercially available time domain reflectometry (TDR) unit for field measurements of the dielectric properties of frozen and thawed soils and ice. A core barrel developed by the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) and modified for use in frozen soil was used to auger an annular slot around which the waveguide fits. Time domain traces of waveforms reflected from the sample-air interface and from a metal short are recorded in the field and later analyzed to give complex dielectric permittivity between 0.05 and 1.0 GHz.

40-3308

**Characterization of sea ice types using synthetic aperture radar.**

Lyden, J.D., et al. *IEEE transactions on geoscience and remote sensing*, Sep. 1984, GE-22(5), p.431-439, 17 refs.

Burns, B.A., Maffett, A.L.

**Sea ice distribution, Ice conditions, Remote sensing, Airborne radar, Ice surface, Radar echoes, Mapping, Arctic Sea.**

40-3309

**Solar and terrestrial radiation in the Antarctic and its parameterization by means of synoptic observations.** (Die solare und terrestrische Strahlung in der Antarktis und ihre Parameterisierung mit Hilfe von synoptischen Beobachtungen).

Wamser, C., et al. *Meteorologische Rundschau*, Feb. 1986, 39(1), p.25-31, In German with English summary, 20 refs.

König, G.

**Albedo, Solar radiation, Antarctica—Georg von Neumayer Station.**

Measurements of solar and terrestrial radiation and net radiation at the Georg von Neumayer Station is investigated and compared with the calculated actual and mean radiation for a 3 month period. For parameterization only the surface observations of the station were used. The formulas were adjusted to the special conditions of the antarctic shelf ice. The high albedo of the snow-covered surface may lead to multiple reflections of solar radiation between the surface and the clouds. A simple procedure considers this effect. The parameterization of the long wave irradiance is done by means of recursion for-

mulas for a 3 layer atmosphere using mean radiative characteristics of clouds. Comparison of computed and measured parameters shows the method to be reliable.

40-3310

**Spatial variability of oceanic water transfer by the Antarctic Circumpolar Current.** (Prostranstvennaya izmenchivost' baroklinnogo perenosov vod Antarkicheskim tsirkumpoliarnym techeniem).

Treshnikov, A.F., et al. *Geograficheskoe obshchestvo SSSR. Izvestiia*, Mar.-Apr. 1986, 118(2), p.113-121, In Russian, 22 refs.

Botnikov, V.N., Lesenkov, S.B.

Icebergs.

On the basis of data collected in ten years of Polex South, as well as other available data, a chart showing shape and water transport of the Antarctic Circumpolar Current is constructed. It shows highest values at the 0 deg meridian and lowest in the Drake Passage. Flow rate there is slower than in other areas by several tens of sverdrups. Tabulated data include meridional profiles, name of ship, date of investigation, the latitudinal borders of the current and vertical distribution of the flow in sverdrups.

40-3311

**Formation of relief and deposition in the recent glaciation area of Severnaya Zemlya.** (Formirovaniye otlozhenii i rel'efa v oblasti sovremennogo oledneniia Severnoi Zemli).

Makeev, V.M., et al. *Geograficheskoe obshchestvo SSSR. Izvestiia*, Mar.-Apr. 1986, 118(2), p.127-132, In Russian, 9 refs.

Bolshianov, D.IU.

**Glacier beds, Mountain glaciers, Periglacial processes, Moraines, Glacial erosion, Ground ice, Ice structure, USSR—Severnaya Zemlya.**

40-3312

**Changes in geocryological conditions, induced by economic development of forests, in southern Central Yakutia.** (Izmeneniye geokriologicheskikh usloviy pri osvoenii lesnykh prirodnykh kompleksov na iuge Tsentral'noi Iakutii).

Stashenko, A.I., *Geograficheskoe obshchestvo SSSR. Izvestiia*, Mar.-Apr. 1986, 118(2), p.150-153, In Russian, 8 refs.

**Soil erosion, Frozen fines, Permafrost depth, Active layer, Permafrost structure, Taiga, Cryogenic soils.**

40-3313

**International perspective on large-scale snow studies.**

Rango, A., *Hydrological sciences journal*, Jun. 1985, 30(2), p.225-238, In English with French summary, 18 refs.

**Snow cover distribution, Snow cover effect, Research projects, Data processing, Climate, Hydrology, Measurement.**

40-3314

**Optimization of a snow network by multivariate statistical analysis.**

Galeati, G., et al. *Hydrological sciences journal*, Mar. 1986, 31(1), p.93-108, In English with French summary, 15 refs.

Rossi, G., Pini, G., Zilli, G.

**Snow cover, Snow water equivalent, Snow hydrology, Statistical analysis, Italy—Alps.**

40-3315

**Initial attempt at interpreting the structure of mountainous areas in the western Antarctica with space imagery.**

Bud'ko, V.M., et al. *Mapping sciences and remote sensing*, Apr.-June 1985, 22(2), p.106-113, For Russian original see 39-2892 or 14E-31654, 10 refs.

Kameney, E.N.

**Glacial geology, Geologic structures, Topographic features, Photointerpretation, Antarctica—Antarctic Peninsula.**

The second of two reports on the use of space imagery in the interpretation of Antarctica's geologic structure applies interpretation procedures described in an earlier article to produce a geologic map of a portion of the Antarctic Peninsula. Features identified on space imagery and depicted on the map include: a deep pericratonal fault zone, a Mesozoic fold belt interrupted by a complex system of faults, and ring or annular structures of volcanic origin. (Auth.)

40-3316

**Geologic interpretation of Antarctica's mountainous regions with space imagery.**

Bud'ko, V.M., *Mapping sciences and remote sensing*, Jan.-Mar. 1985, 22(1), p.27-33, For Russian original see 39-2893 or 14E-31655.

**Glacial geology, Topographic features, Glacier ice, Glacier surfaces, Photointerpretation, Antarctica—Antarctic Peninsula.**

It is demonstrated how ice-surface relief identified on space imagery can be used in mapping selected elements of the geologic structure of the Antarctic Peninsula. The mapping procedure is based on the fact that all major subglacial relief forms appear, albeit in subdued form, on the surface of slow moving and relatively thin ice sheets. Since subglacial bedrock relief

reflects geologic structure, particular surface configurations of ice identified on space imagery can be used as indicators of major structural elements. Examples of the procedure, including imagery of ice relief and corresponding cartographic representations of underlying structure are provided for faults and ring structures. (Auth.)

40-3317

**Morphometric maps of glacial surface topography.**

Petrova, T.M., *Mapping sciences and remote sensing*, Jan.-Mar. 1985, 22(1), p.63-71, For Russian original see 38-4174.

**Mountain glaciers, Glacier ice, Glacier surfaces, Topographic features, Mapping.**

40-3318

**Avalanche-hazard maps for planning purposes.**

Zolotarev, E.A., et al. *Mapping sciences and remote sensing*, Jul.-Sep. 1985, 22(3), p.238-248, For Russian original see 40-878, 12 refs.

Dziuba, V.V.

**Avalanche engineering, Avalanche forecasting, Mapping.**

40-3319

**World atlas of snow and ice resources.**

Kotliakov, V.M., et al. *Mapping sciences and remote sensing*, Jul.-Sep. 1985, 22(3), p.249-256, For Russian original see 40-857, 4 refs.

Dreier, N.N.

**Maps, Snow, Ice.**

40-3320

**Proceedings of the ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, 11-14, April 1983.**

ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1985, SR 85-15, 177p., ADA-161 129, Refs. passim. For individual papers see 40-3321 through 40-3335.

Blaisdell, G.L., ed. Yong, R.N., ed.

**Tires, Cold weather performance, Motor vehicles, Road icing, Military equipment, Snow cover effect, Traction, Meetings, Mobility.**

40-3321

**Need for snow tire characterization and evaluation.**

Yong, R.N., et al. *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No.SR 85-15, MP 2044, 12p., ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings Edited by G.L. Blaisdell and R.N. Yong, p.1-2. ADA-161 129.

Blaisdell, G.L.

**Tires, Cold weather performance, Motor vehicles, Snow cover effect, Traction.**

40-3322

**General Motors single wheel test truck.**

Altenberndt, S., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No.SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings Edited by G.L. Blaisdell and R.N. Yong, p.5-8. ADA-161 129.

**Vehicle wheels, Traction, Cold weather performance, Loads (forces), Tests.**

40-3323

**Design and use of the CRREL Instrumented Vehicle for cold regions mobility measurements.**

Blaisdell, G.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No.SR 85-15, MP 2044, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings Edited by G.L. Blaisdell and R.N. Yong, p.9-20. ADA-161 129, 2 refs.

**Motor vehicles, Cold weather performance, Traction, Vehicle wheels, Rubber snow friction, Rubber ice friction, Design, Velocity, Loads (forces), Measuring instruments.**

The U.S. Army Cold Regions Research and Engineering Laboratory has recently acquired an instrumented vehicle for the measurement of forces at the tire/surface material interface. The CRREL instrumented vehicle (CIV) is equipped with moment-compensated triaxial load cells mounted in the front wheel assemblies. Forces are measured in the vertical, longitudinal (in the direction of motion) and side directions. In addition, accurate wheel and vehicle speeds and rear axle torque and speed are measured. Modifications to the vehicle (to facilitate the performance of traction and motion resistance tests) include four lock-out type hubs to allow front-, rear- or four-wheel drive and a dual brake system for front-, rear- or four-wheel braking. A mini-computer-based data acquisition system is installed in the vehicle to control data collection and for data processing, analysis and display. Discussion of the vehicle includes its operation and use for the evaluation of the

tire performance and surface material properties of motion resistance and traction

40-3324

**NATC Dynamic Force Measurement Vehicle.** Hodges, H.C., Sr., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.21-25, ADA-161 129, 1 ref.

**Motor vehicles, Cold weather operation, Dynamic loads, Loads (forces), Traction, Trafficability, Design, Velocity, Vehicle wheels.**

40-3325

**Use of a single wheel traction truck for winter traction testing.**

Janowski, W.R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.27-31, ADA-161 129, 6 refs.

**Vehicle wheels, Traction, Cold weather performance, Snow cover effect, Ice cover effect, Tires, Tests, Dynamic loads.**

40-3326

**Passenger car and light truck tire dynamic driving traction in snow: SAE recommended practice.**

SAE Snow Test Ad Hoc Committee, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.35-43, ADA-161 129.

**Motor vehicles, Snow cover effect, Traction, Tires, Snow compaction, Trafficability, Tests, Equipment, Velocity.**

40-3327

**Winter tire testing as seen by the independent tester.**

Domeck, D.C., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.45-57, ADA-161 129, 4 refs.

**Tires, Traction, Cold weather performance, Snow cover effect, Tests, Snow surface, Computer applications, Velocity, Brakes (motion arresters), Mobility.**

40-3328

**Tire performance evaluation for shallow snow and ice.**

Harrison, W.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.59-65, ADA-161 129, 22 refs.

**Tires, Cold weather performance, Snow depth, Ice cover effect, All terrain vehicles, Snow strength, Forecasting, Snow surface, Traction, Snow cover effect, Mathematical models.**

40-3329

**Evaluation of empirical tread design predictions of snow traction as measured with a self-contained traction vehicle.**

Centner, R.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.67-75, ADA-161 129, 5 refs.

**Tires, Traction, Snow cover effect, Cold weather performance, Design, Tests, Forecasting, Motor vehicles.**

40-3330

**General Motors tire performance criteria specification system.**

Peterson, K.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.79-91, ADA-161 129, 7 refs.

**Tires, Cold weather performance, Motor vehicles, Friction, Snow cover effect, Design criteria, Noise (sound).**

40-3331

**Army basic criteria for tires.**

Collins, N., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.93-97, ADA-161 129.

**Tires, Military equipment, Road icing, Snow cover effect, Trafficability, Cold weather performance, Motor vehicles.**

40-3332

**Comparison test of M151A truck tires.**

Lane, J.W., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.99-133, ADA-161 129, 11 refs.

**Tires, Motor vehicles, Cold weather performance, Road icing, Snow cover effect, Military equipment, Ice cover effect, Tests.**

40-3333

**Winter tire tests: 1980-81.**

Blaisdell, G.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, MP 2045, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.135-151, ADA-161 129, 2 refs.

**Tires, Ice cover effect, Snow cover effect, Motor vehicles, Cold weather performance, Surface properties, Tests, Road icing, Traction, Mobility.**

40-3334

**NATO reference mobility model and the WES dimensional analysis method of describing tire performance.**

Turnage, G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.157-175, ADA-161 129, 7 refs.

**Tires, Cold weather performance, Military equipment, Surface properties, Traction, Tests, Design, Clays, Sands.**

40-3335

**Field demonstration of traction testing procedures.**

Blaisdell, G.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1985, No. SR 85-15, MP 2046, ISTVS Workshop on Measurement and Evaluation of Tire Performance under Winter Conditions, Alta, Utah, Apr. 11-14, 1983. Proceedings. Edited by G.L. Blaisdell and R.N. Yong, p.176, ADA-161 129.

**Snow cover effect, Traction, Motor vehicles, Tires, Tests, Measuring instruments.**

40-3336

**Geothermal conditions of petroleum occurrences of the Siberian platform.**

Vozhov, V.I., et al, *International geology review*, Feb. 1984, 26(2), p.206-213, Translated from *Sovetskaya geologiya*, 1983, No.10, p.49-56. 15 refs.

**Permafrost distribution, Hydrocarbons, Exploration, Permafrost hydrology, Permafrost depth, Permafrost thickness, Frozen rock temperature.**

40-3337

**Structural bonds and types of contacts in perennally frozen rocks.**

(Strukturnye svyazi i tipy kontaktov v merzlykh porodakh). Ershov, E.D., *Inzhenernaia geologiya*, Mar.-Apr. 1986, No.2, p.25-30, In Russian. 3 refs.

**Ice crystals, Permafrost structure, Cohesion, Frozen rock strength, Breccia, Fines, Clays, Organic soils, Ground ice.**

40-3338

**Quantitative estimate of the intensity of rock weathering processes on slopes.**

(Kolichestvennaia otsenka intensivnosti protsessov vyvetrivanii gornykh porod na sklonakh). Makhinov, A.N., *Inzhenernaia geologiya*, Mar.-Apr. 1986, No.2, p.86-91, In Russian. 11 refs.

**Solidification, Soil freezing, Slope processes, Weathering, Soil erosion.**

40-3339

**Ways of improving methods of testing permafrost soils and foundations.** (Puti sovershenstvovaniia metodov ispytani merzlykh gruntov i osnovanii). Mirenburg, I.U.S., *Inzhenernaia geologiya*, Mar.-Apr. 1986, No.2, p.114-118, In Russian. 19 refs.

**Foundations, Piles, Permafrost bases, Frozen rock strength, Rheology.**

40-3340

**Ground freezing during sedimentation.**

Khalikov, G.A., *Akademiia nauk SSSR. Izvestiya. Physics of the solid earth*, 1983 (Pub. Jan. 84), 19(6), p.496-497, Translated from its *Izvestiia. Fizika Zemli*. 3 refs.

**Soil freezing, Phase transformations, Sedimentation, Mathematical models, Soil water migration.**

40-3341

**Study of the particle sizes and ice-forming activity of silver iodide aerosols generated by pyro-compounds.**

Baklanov, A.M., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1982, 18(5), p.386-391, 9 refs., Translated from its *Izvestiia. Fizika atmosfery i okeana*.

**Cloud seeding, Aerosols, Silver iodide, Smoke generators, Ice nuclei.**

40-3342

**Numerical model of the wind drift of ice, taking into account the appearance of zones of maximum solidity.**

Semenov, E.V., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1982 (Pub. Apr. 83), 18(9), p.775-778, 6 refs., Translated from its *Izvestiia. Fizika atmosfery i okeana*.

**Taran, B.M. Ice cover, Drift, Stresses, Strains.**

40-3343

**Conditions for the origination of hail nuclei in clouds.**

Trisov, M.I., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1982, 18(3), p.197-200, 18 refs., Translated from its *Izvestiia. Fizika atmosfery i okeana*.

**Supercooled clouds, Aerosols, Ice nuclei, Hailstone growth, Hailstone structure.**

40-3344

**Environmental studies of the proposed Terror Lake Hydroelectric Project, Kodiak Island, Alaska: raptor studies; intragravel water temperature studies.**

Wilson, W.J., et al, Alaska, University, Arctic Environmental Information and Data Center, Sep. 1980, 57p., AEIDC No. QH 541.5 R5 H5E5, 11 refs.

**Evans, C.D., Trudgen, D.E. Environmental impact, Electric power, Water temperature, Lake water, River diversion, Drainage, Ecology, Diurnal variations, United States—Alaska—Terror Lake, United States—Alaska—Kizhuyak River.**

40-3345

**Influence of surface hydroxyl groups on the ice-forming activity of silicon dioxide particles.**

Gorbunov, B.Z., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1982, 18(2), p.155, Translated from its *Izvestiia. Fizika atmosfery i okeana*.

**Kutsenogil, K.P., Safatov, A.S. Aerosols, Ice formation, Cold chambers.**

40-3346

**Thermal influence of submerged buoyant jet on sea ice cover.**

Bogorodskii, V.V., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983 (Pub. Feb. 84), 19(7), p.545-548, For Russian original see 40-249. 5 refs.

**Sukhorukov, K.K. Sea ice distribution, Subglacial observations, Ocean currents, Hydraulic jets, Buoyancy, Turbulence.**

40-3347

**Physical conditions of bottom melting of the Arctic sea ice pack.**

Bogorodskii, V.V., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983 (Pub. Mar. 84), 19(8), p.667-669, For Russian original see 40-250. 1 ref.

**Sukhorukov, K.K. Ice bottom surface, Sea ice distribution, Pack ice, Ice melting, Subglacial drainage.**

40-3348

Spectroscopic measurements of the total CO, CH<sub>4</sub> and N<sub>2</sub>O content in the atmospheric layer in Arctic regions.

Gabriellian, A.G., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983, 19(4), p.316-318, 9 refs., Translated from its *Izvestiya. Fizika atmosfery i okeana*.

Grechko, E.I., Dianov-Klokov, V.I.

Gases, Air pollution, Trace elements, Polar regions, Atmospheric composition.

40-3349

Polarization structure of backscattering by liquid drop and crystalline clouds.

Zuev, V.E., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983 (Pub. Jan. 84), 19(6), p.433-448, 12 refs., Translated from its *Izvestiya. Fizika atmosfery i okeana*.

Krekov, G.M., Krekova, M.M.

Cloud physics, Cloud droplets, Ice crystals, Polarization (waves), Backscattering.

40-3350

Investigation of the spectral transmission of a crystal fog.

Volkovitskii, O.A., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983, 19(5), p.368-372, 16 refs., Translated from its *Izvestiya. Fizika atmosfery i okeana*.

Ice fog, Microstructure, Spectra, Transmission, Measuring instruments, Cold chambers.

40-3351

Extinction and scattering of infrared radiation by polydisperse systems of ice plates and cylinders.

Petrushin, A.G., *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics*, 1983, 19(3), p.197-201, 21 refs., Translated from its *Izvestiya. Fizika atmosfery i okeana*.

Ice physics, Infrared radiation, Albedo, Dispersions, Extinction, Scattering, Absorption.

40-3352

Observations on the Quaternary in the Boyer River, south shore of the St. Lawrence Estuary, Quebec.

[Observations sur le Quaternaire de la rivière Boyer, côte sud de l'estuaire du Saint Laurent, Québec], Dionne, J.C., *Géographie physique et Quaternaire*, 1985, 39(1), p.35-46, In French with English and German summaries. 20 refs.

Quaternary deposits, Glacial deposits, Erosion, Paleoclimatology, Estuaries, Particle size distribution, Canada—St. Lawrence River.

40-3353

Glacial erosion patterns in north central Gaspésie, Quebec. [Le modèle glaciaire du centre de la Gaspésie septentrionale, Québec].

Hétu, B., et al, *Géographie physique et Quaternaire*, 1985, 39(1), p.47-66, In French with English and German summaries. Refs. p.64-66.

Gray, J.T.

Glacial erosion, Glaciation, Paleoclimatology, Quaternary deposits, Ice scoring, Glacier flow, Glacial deposits, Canada—Quebec—Gaspé Peninsula.

40-3354

Neoglacial gelifluction in a snow bed at the tree line (northern Quebec). [Gelifluction néoglaciale dans une combe à neige à la limite des arbres, Québec nord-ouest].

Payette, S., et al, *Géographie physique et Quaternaire*, 1985, 39(1), p.91-97, In French with English summary. 31 refs.

Boudreau, F., Gagnon, R.

Snow cover distribution, Topographic effects, Paleoclimatology, Vegetation, Soils, Snow cover effect, Radioactive age determination, Carbon isotopes, Snow melting.

40-3355

Differences in ionic compositions and behavior in winter rain and snow.

Topol, L.E., *Atmospheric environment*, 1986, 20(2), p.347-355, 18 refs.

Snow composition, Ion density (concentration), Precipitation (meteorology), Chemical analysis, Rain, Winter, United States.

40-3356

Reversed-phase high-performance liquid chromatographic determination of nitroorganics in munitions wastewater.

Jenkins, T.F., et al, *Analytical chemistry*, Jan. 1986, 58(1), MP 2049, p.170-175, 32 refs.

Leggett, D.C., Grant, C.L., Bauer, C.F.

Waste treatment, Water treatment, Water chemistry, Detection, Water pollution, Ground water.

Concentrations of HMX, RDX, TNT, and 2,4-DNT are determined in munitions wastewater. Aqueous samples are diluted

with an equal volume of 76/24 (v/v) methanol-acetonitrile, filtered through a 0.4 micron polycarbonate membrane, and analyzed by reversed-phase HPLC using an LC-8 column with 50/38/12 (v/v/v) water-methanol-acetonitrile. The method provided linear calibration curves to at least several hundred micrograms per liter. Detection limits were conservatively estimated to be 26, 22, 14, and 10 microgram/L for HMX, RDX, TNT, and 2,4-DNT, respectively, with corresponding standard deviations of 3.4, 3.3, 4.4, and 4.6 microgram/L up to concentrations of 250 microgram/L. At higher concentrations, the percent relative standard deviation values were approximately 2% for HMX and RDX and 4% for TNT and DNT. A ruggedness test involving the major manipulative steps in the procedure indicated that consistent results required glass sample containers, preconditioning of filters, and careful maintenance of sample-to-organic solvent ratio. The method was tested with munition wastewater from several Army ammunition plants and found to perform adequately for lead and pack wastewaters, wastewater from HMX/RDX manufacture, and contaminated groundwater.

40-3357

Interlaboratory evaluation of high-performance liquid chromatographic determination of nitroorganics in munition plant wastewater.

Bauer, C.F., et al, *Analytical chemistry*, Jan. 1986, 58(1), MP 2050, p.176-182, 11 refs.

Grant, C.L., Jenkins, T.F.

Waste treatment, Water treatment, Water pollution, Chemical analysis, Water chemistry, Countermeasures, Tests.

A reversed-phase HPLC method for the determination of nitroorganic compounds (DNT, TNT, RDX, HMX) in munitions wastewaters was evaluated in a collaborative study. Nine laboratories analyzed four aqueous matrices, including groundwater and treated wastewater, which were spiked with the analytes at levels from 30 to 600 microgram/L. Recoveries of analytes were similar regardless of matrix: DNT and RDX being recovered quantitatively, and TNT and HMX showing losses of about 5%. Intralaboratory precisions, based on the average of duplicate determinations, were less than 15 microgram/L, which corresponds to 9% relative standard deviation at the average concentration examined. Interlaboratory precisions were at most 50% larger than intralaboratory values. Valid statistical analysis required rejection of about 10% of the data set as outliers. The rationale for applying a variety of statistical evaluations is discussed.

40-3358

Trashrack vibrations in hydroelectric power plants: causes, design criteria and constructive measures.

[Schwingungen von Einlaufrechen bei Wasserkraftanlagen: Ursachen, Bemessungsansätze und konstruktive Massnahmen],

Schleiss, A., *Wasser, Energie, Luft—Eau, énergie, air*, 1985, No.10, p.299-303, In German with French and English summaries. 11 refs.

Waste treatment, Ice formation, Vibration, Fatigue (materials), Design, Countermeasures, Electric power.

40-3359

Thermal analysis of a shallow utilidor.

Pretteplace, G., et al, MP 2021, [1986], 10p., 4 refs.

Prepared for presentation at the 77th Annual Conference of the International District Heating and Cooling Association, June 8-12, 1986, Ashville, NC.

Richmond, P.W., Humiston, N.

Waste disposal, Thermal properties, Utilities, Thermal conductivity, Heating, Water pipelines, Air temperature, Design, Countermeasures, Freezing.

40-3360

Survey of ice problem areas in navigable waterways.

Zufelt, J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1985, SR 85-02, 32p.

ADA-157 477.

Calkins, D.J.

Ice navigation, Icing, Locks (waterways), Dams, Ice control, River ice, Ice conditions, Ice jams, Ice break-up.

This report presents the findings of a survey of ice problems encountered on the nation's major navigable waterways. A survey questionnaire was developed and, through a field interview group, was distributed to lock and dam facilities on the Allegheny, Monongahela, Ohio, Kanawha, Kaskaskia, and Mississippi Rivers and the Illinois Waterway. Analysis of the completed questionnaires identified 13 ice problem categories. The report describes each category of ice problem encountered, as well as the cited methods, operational and/or structural, undertaken to reduce the impact of each ice problem.

40-3361

Impact of slow-rate land treatment on groundwater quality: toxic organics.

Parker, L.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1984, CR 84-30, 36p., ADA-153 253, Refs. p.19-21.

Jenkins, T.F., Foley, B.T.

Ground water, Waste treatment, Water treatment, Land reclamation, Seepage, Organic nuclei, Environmental impact.

The removal efficiency for 16 organic substances in wastewater was studied on an outdoor, prototype slow-infiltration system.

The initial concentration of each of these substances in the wastewater was approximately 50 microgram/L. Removal was via volatilization during spray application and subsequent adsorption in the soil. The percent removal during spraying could be estimated from the liquid-phase transfer coefficient; losses were up to 70% for the most volatile components. The total percent removal for the system, based on the concentration in the percolate, was more than 98% for all substances. Only chloroform, which has a low octanol-water coefficient and according to the literature is not degradable aerobically, was continuously detected in the percolate. The major final removal mechanisms are believed to be volatilization and biodegradation-biotransformation. Breakthrough of several other organics in early spring as a result of application during the colder months was also observed. The two substances that were most persistent in the soil were PCBs and diethylphthalate. PCBs were apparently slowly lost from the system, probably by volatilization. The behavior of diethylphthalate was different in the two soils tested but was more recalcitrant than expected.

40-3362

Numerical modeling of sea ice dynamics and ice thickness characteristics. A final report.

Hibler, W.D., III, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1985, CR 85-05, 50p., ADA-154 600, Refs. p.35-38.

Ice mechanics, Drift, Sea ice, Ice cover thickness, Ice edge, Mathematical models, Heat balance.

A dynamic-thermodynamic sea ice model is extended to include a full thermodynamic code and a complete multilevel ice thickness distribution. The variable thickness formulation includes a more realistic parameterization of ice ridging than used in previous models. Seasonal simulations have been performed using this model and the results have been analyzed with particular emphasis of the ridge buildup results off the Canadian Archipelago and off the North Slope. This report presents a complete description of this model and discusses progress made on examining and testing the variable thickness extensions.

40-3363

TNT, RDX and HMX explosives in soils and sediments. Analysis techniques and drying losses.

Cragin, J.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1985, CR 85-15, 11p., 13 refs.

Leggett, D.C., Foley, B.T., Schumacher, P.W.

Explosives, Freeze drying, Soil pollution, Sediments, Chemical analysis, Countermeasures, Drying, Adsorption, Absorption, Tests.

A method for the analysis of TNT, RDX and HMX explosives in soils and sediments has been developed. It consists of methanol extraction followed by reversed-phase high performance liquid chromatography using 10% acetonitrile/40% methanol/50% water as the eluant. This method was used to study the effect of various drying techniques upon the recovery of TNT, RDX and HMX from soil and sediment samples contaminated with high (%) and low (microgram/g) levels of these explosives. For highly contaminated samples, complete recovery of TNT and RDX was obtained using freeze drying while air drying at room temperature resulted in greater than 40% recovery for both explosives. Other techniques, such as oven drying at 105C, oven drying at 45C, microwave oven drying, and drying under infrared lamps, all resulted in greater losses, with TNT and RDX recoveries ranging from 76 to 90%. Drying losses were not due to simple volatilization but rather to chemical reaction and/or sorption. For soil and sediment samples containing low levels of TNT, RDX and HMX, recoveries of all three explosives were quantitative for all of the above drying techniques.

40-3364

Mechanical properties of multi-year sea ice. Phase 2: Test results.

Cox, G.F.N., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1985, CR 85-16, 81p., ADA-166 333, 10 refs.

Richter-Menge, J.A., Weeks, W.F., Bosworth, H., Perron, N., Mellor, M., Durrell, G.

Ice mechanics, Ice strength, Sea ice, Strains, Compressive properties, Ice physics, Pressure ridges, Tensile properties, Loads (forces).

This report presents the results of the second phase of a test program designed to obtain a comprehensive understanding of the mechanical properties of multi-year sea ice from the Alaskan Beaufort Sea. In Phase II, 62 constant-strain-rate uniaxial compression tests were performed on horizontal and vertical ice samples from multi-year pressure ridges to examine the effect of sample orientation on ice strength. Also conducted were 36 constant-strain-rate tension tests, 55 conventional triaxial tests and 35 constant-load compression tests on multi-year pressure ridge samples to provide data for developing ice yield criteria and constitutive laws. Data are presented on the strength, failure strain and modulus of multi-year sea ice under different loading conditions. The effects of ice temperature, porosity, structure, strain rate, confining pressure and sample orientation on the mechanical properties of multi-year sea ice are examined.

40-3365

Field tests of the kinetic friction coefficient of sea ice.

Tatinclaux, J.C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1985, CR 85-17, 20p., ADA-163 170, 4 refs.

Murduy, D.

Ice friction, Sea ice, Surface properties, Steel structures, Ships, Ice crystal structure, Pressure, Ice strength, Velocity, Tests.

This report presents the results of tests of the ice friction coefficient carried out during the May 1984 expedition of the F.S. *Polarstern* off the coast of Labrador. The test surfaces were Inerta-160-coated steel plates and bare steel plates, hand roughened and sandblasted. The main findings of the studies were: 1) columnar and granular sea ice showed no significant differences in friction coefficient; 2) for columnar ice, friction coefficient was independent of ice crystal orientation with respect to test surface; 3) friction coefficient was independent of normal pressure applied on ice sample; 4) friction coefficient initially decreased with increasing relative velocity between the ice sample and the test surface and reached a steady value at higher speeds; 5) friction coefficient increased with increasing surface roughness; 6) a wetting surface exhibited a higher friction coefficient than a non-wetting surface of the same or even higher roughness average.

## 40-3366

**Sorption of military explosive contaminants on bentonite drilling muds.**

Leggett, D.C., *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1985, CR 85-18, 33p., ADA-163 231, Refs. p. 14-16.

**Explosives, Drilling fluids, Military operation, Pollution, Mud, Chemical composition, Environmental protection, Adsorption, Absorption, Analysis (mathematics).**

Concern over the environmental fate of explosives has brought about development of sensitive analytical methods for measuring them in groundwater. In turn this concern has been extended to validating the sampling procedures for groundwater. This report addresses the potential effects of residual drilling muds on the analysis for explosive contaminants (TNT, DNT, RDX and HMX) in monitoring wells. The approach was to determine sorption isotherms for each contaminant. Sorption appeared to be independent of solids concentration. Linear isotherms were obtained for RDX and HMX over a range of analytic concentrations; therefore, a single constant can be used to estimate the amount sorbed when the solution concentration is known. Isotherms for TNT and DNT were not linear, however. Scatchard analysis suggested that the isotherms for these analytes could be resolved into two predominant components: a linear component above a certain sorbed quantity and a Langmuir-type component below this quantity. The experimental data were fitted by regression analysis using the appropriate model. The equations developed can be used to predict the sorbed fraction (analytical bias) for any combination of solids and analyte concentration. The amounts of bentonite found in some existing wells do not appear to be sufficient to cause significant bias in analyses for these explosive contaminants.

## 40-3367

**Constitutive relations for a planar, simple shear flow of rough disks.**

Shen, H.H., et al., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1985, CR 85-20, 17p., ADA-163 147, 10 refs.

Hopkins, M.A.

**Shear flow, Surface roughness, Flow rate, Friction, Stresses, Avalanches, Computer applications, Tests.**

Stresses developed in a rapid, simple shear flow of disks are quantified. Collisional momentum transfer is considered to be the dominant stress generating mechanism. The disks are inelastic and frictional. The restitution coefficient and the coefficient of friction together determine the transfer of momentum and dissipation of energy during a collision. The frictional coefficient generates and maintains a rotational motion of disks. The total fluctuation motion of disks consists of two translational modes and one rotational mode. The rotational mode is found to depend on both the restitution and friction coefficient. Equipartitions of energy among all modes of motion is absent. The mean rotation, however, depends only on the mean flow gradient. The analysis assumes a constant magnitude for all fluctuation modes. Comparison with a computer simulated disk flow shows good agreement. This implies that the distribution of velocity magnitude may not be crucial to the quantification of stresses.

## 40-3368

**Angular characteristics of an acoustic field in air created by a vibroseismic generator set up on an ice floe.**

Gushchin, V.V., et al., *Akademiia nauk SSSR. Izvestiya. Physics of the solid Earth*, 1982 (Pub. June 83), 18(11), p.902-904, Translated from its Izvestiya. Fizika zemli. 5 refs.

Zaslavskii, I.U.M.

**Ice floes, Lakes, Ice cover thickness, Measuring instruments, Vibroseismic, Acoustic measurement, Arctic Ocean.**

## 40-3369

**Taking account of the mutual shading of winter glazed hothouse sheds in calculating the distance between hothouses under conditions of the extreme North.**

Sharupich, V.P., *Applied solar energy*, 1984, 20(1), p.65-69, Translated from *Geliotekhnika*.  
**Glass, Iceing, Illuminating, Solar radiation, Hothouses, Design.**

## 40-3370

**Statistical model of the mean field of the ocean-surface temperature east of Newfoundland.**

Abramov, R.V., et al., *Oceanology*, 1983 (Pub. June 84), 23(6), p.714-718, Translated from *Okeanologiya*. 15 refs.

Gushchin, O.A., Kool', L.V., Stont, Zh.I.

**Ocean environments, Air water interactions, Surface temperature, Heat transfer, Statistical analysis, Models.**

## 40-3371

**Exchange of oxygen and CO<sub>2</sub> between water and atmosphere in the Arctic seas.**

Liakhin, I.U.I., et al., *Oceanology*, 1983 (Pub. June 84), 23(6), p.722-726, Translated from *Okeanologiya*. 12 refs.

Rusanov, V.P.

**Gases, Ocean currents, Sea water, Composition, Arctic regions.**

## 40-3372

**Water dynamics of the subarctic frontal zone in the Pacific.**

Ovchinnikov, I.M., et al., *Oceanology*, 1984 (Pub. Aug. 84), 24(1), p.29-32, Translated from *Okeanologiya*. 4 refs.

Shcherbinin, A.D.

**Ocean currents, Oceanographic surveys, Subarctic regions, Measuring instruments, Water transport.**

## 40-3373

**Sorbent preparations for oil pollution cleanup in northern seas.**

Mesiats, S.P., et al., *Oceanology*, 1984 (Pub. June 85), 24(6), p.692-694, Translated from *Okeanologiya*. 3 refs.

Nesterova, M.P., Gornitskii, A.B.

**Oil spills, Water pollution, Minerals, Sea water.**

## 40-3374

**Global sea level: estimating and explaining apparent changes.**

Barnett, T.P., Symposium on Coastal and Ocean Management, 3rd, 1983, San Diego, Calif. Proceedings. Edited by O.T. Magoon and H. Converse, New York, American Society of Civil Engineers, 1983, p.2777-2783, 12 refs.

DLC HT391.S935

**Sea level, Ice sheets, Ice melting, Sea water, Thermal expansion, Antarctica.**

A new analysis of "global" sea level has been made that largely avoids space/time bias of previous works. A coherent pattern of increasing relative sea level (RSL) existed on average at all stations analyzed between 1903-1969. Subject to considerable assumption, the rate of RSL increase associated with this pattern was 15 cm/century. A similar analysis of the period 1930-1975 again showed RSL increasing on average everywhere but in the western half of the North Pacific Ocean. Decrease of RSL in this area was substantiated by hydrographic data. Thus, in recent years the concept of a "global" sea level rise is not supported. The temporal behavior of the near global signals from both time periods was well approximated by a simple linear trend. There was no evidence of a more rapid rise in RSL in recent years. Potential causes of the above RSL change were investigated and assessed. They include: approximately equal melting of Greenland/Antarctica, changes in the length of day, change in sea surface temperature, thermal expansion of the oceans, and changes in ocean circulation and/or subsidence along all the coastal margins occurred simultaneously. In summary, it is not possible at this time to explain reliably the apparent increase in RSL. (Auth. mod.)

## 40-3375

**Nordic seas.**

Hurdle, B.G., ed, New York, Springer-Verlag, 1986, 777p., Refs. passim. For selected papers see 40-3376 through 40-3379.

**Sea ice distribution, Ice conditions, Ice physics, Oceanography, Climatology, Hydrology, Underwater acoustics, Tides, Tectonics, Seismology, Arctic Ocean.**

## 40-3376

**Climatology.**

Gathman, S.G., Nordic seas. Edited by B.G. Hurdle, New York, Springer-Verlag, 1986, p.1-20, 27 refs.  
**Climatology, Sea water, Water temperature, Ice edge, Marine meteorology, Sea ice, Remote sensing, Arctic Ocean.**

## 40-3377

**Ice cover.**

Wadhams, P., Nordic seas. Edited by B.G. Hurdle, New York, Springer-Verlag, 1986, p.21-86, Refs. p.78-84.

**Sea ice distribution, Ice conditions, Ice edge, Ice mechanics, Ice formation, Water chemistry, Water temperature, Ice melting, Drift, Ocean waves, Fast ice, Arctic Ocean.**

## 40-3378

**Physical properties of the sea ice cover.**

Weeks, W.F., MP 2047, Nordic seas. Edited by B.G. Hurdle, New York, Springer-Verlag, 1986, p.87-102, Refs. p.98-100.

**Ice structure, Ice composition, Sea ice, Ice physics, Ice cover thickness, Ice formation, Snow cover, Ice crystal structure, Arctic Ocean.**

## 40-3379

**Arctic waters.**

Swift, J.H., Nordic seas. Edited by B.G. Hurdle, New York, Springer-Verlag, 1986, p.129-154, Refs. p.151-153.

**Oceanography, Sea water, Water temperature, Hydrography, Water chemistry, Density (mass/volume), Seasonal variations, Arctic Ocean.**

## 40-3380

**Studies on genesis and time of the deposits of "The Baitushan Ice Age" in Northeast China.**

Qiu, S., et al., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.195-203, 9 refs., In Chinese with English summary.

Li, F.

**Lacustrine deposits, Glaciation, Paleoclimatology, Sediments, Pleistocene, Glacial deposits.**

## 40-3381

**Analysis of relationship of normal frost-heave force with respect to foundation base area.**

Zhou, Y., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.205-212, 3 refs., In Chinese with English summary.

**Frost heave, Soil pressure, Foundations, Loads (forces), Frost penetration, Slope orientation.**

## 40-3382

**Calculating the counter-forces of heaving in the foundation of piles in seasonally frozen regions.**

Sui, X., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.213-220, 4 refs., In Chinese with English summary.

**Frost heave, Pile extraction, Loads (forces), Frozen ground mechanics, Foundations, Countermeasures, Experimentation, Seasonal freeze thaw.**

## 40-3383

**Feature and appraisal of the bedrock-crevice water in the permafrost region of the Great Xinan Mountains.**

Lin, F., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.221-225, In Chinese with English summary.

**Permafrost hydrology, Ground water, Mountains, China—Great Xinan Mountains.**

## 40-3384

**Paleomagnetic age of the borehole No.1 of Dabuxun Lake, Qaidam Basin.**

Derbyshire, E., et al., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.227-232, 15 refs., In Chinese with English summary.

Shaw, J., Wang, J.

**Sediments, Boreholes, Drill core analysis, Magnetic properties, Carbon isotopes.**

## 40-3385

**Role of meltwater supply to the rivers in some mountains of south Tibet.**

Yang, X., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.233-238, 5 refs., In Chinese with English summary.

**Meltwater, River flow, Snowmelt, Glacier ablation, Mountains, Tibet.**

## 40-3386

**On the valley climate of Urumqi River in the Tianshan Mountains.**

Wang, D., et al., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.239-248, 4 refs., In Chinese with English summary.

Zhang, P.

**Snowfall, Climatology, Precipitation (meteorology), Mountains, China—Tian Shan.**

## 40-3387

**Glacier wind in the Rongbu Valley of Mt. Qomolangma.**

Gao, D., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.249-256, In Chinese with English summary. 6 refs.

**Glacial meteorology, Wind (meteorology), Air temperature, Slope orientation, Glacier surfaces, Mountain glaciers, Seasonal variations, Diurnal variations, China—Qomolangma Mountain.**

40-3388

Sporo-pollen assemblages of the Late Quaternary in Cangfengou of Urumqi River and their significance. Pan, A., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.257-264, 5 refs., In Chinese with English summary. Climatic changes, Paleoclimatology, Pollen, Palynology, Vegetation, China—Cangfengou.

40-3389

Current situation of the study on road construction in cold regions of North America. Cheng, G., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.265-278, In Chinese. Cold weather construction, Roads, Frost penetration, Frost heave, Stress strain diagrams, Seepage, Construction materials, Friction, Rheology, Analysis (mathematics).

40-3390

Research of sea ice in China. Dong, X., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.279-282, In Chinese with English summary. 14 refs. Sea ice, Ice navigation, Drift, Acoustics, Ice pressure, Echo sounding, China.

40-3391

Doubt about the quaternary glaciation in southeast Sichuan. Wang, C., *Journal of glaciology and geocryology*, Sep. 1985, 7(3), p.283-290, 9 refs., In Chinese with English summary. Glaciation, Quaternary deposits, Karst, Earthquakes, Geological maps, Glacial erosion.

40-3392

Methods of gathering information on snowfall in the Cordillera from historical data. [Métodos para derivar información sobre precipitaciones nivales de fuentes históricas en la Cordillera de los Andes]. Prieto, M. del R., *Zentralblatt für Geologie und Paläontologie. Teil 1*, Jan. 1984, Nos.11/12, p.1615-1624, In Spanish with English and German summaries. 6 refs. Snowfall, Precipitation (meteorology), Paleoclimatology, Mountains, Climatic changes, Andes.

40-3393

Formation of rock glaciers and the Holocene belts in the Andes of Mendoza, Argentina. [Blockgletscherbildung und holozäne Höhenstufengliederung in den mendozinischen Anden, Argentinien]. Barsch, D., et al., *Zentralblatt für Geologie und Paläontologie. Teil 1*, Jan. 1984, Nos.11/12, p.1625-1632, In German with English and Spanish summaries. 6 refs. Happoldt, H. Rock glaciers, Ice formation, Paleoclimatology, Glacial deposits, Snow line, Glacier melting, Mountains, Andes.

40-3394

Traces of early ice age glacier cover in the Aconcagua Group (32-33 S). [Spuren der hocheiszeitlichen Gletscherbedeckung in der Aconcagua-Gruppe (32-33 S)]. Kühle, M., *Zentralblatt für Geologie und Paläontologie. Teil 1*, Jan. 1984, Nos.11/12, p.1635-1646, In German with English and Spanish summaries. 16 refs. Mountain glaciers, Glacier thickness, Snow line, Distribution, Moraines, Climatic changes, Argentina—Aconcagua Mountains.

40-3395

Changes in the ice cover of temperate and tropical South America during the last 25,000 years. Mercer, J.H., *Zentralblatt für Geologie und Paläontologie. Teil 1*, Jan. 1984, Nos.11/12, p.1661-1665, With German and Spanish summaries. Glaciation, Mountain glaciers, Paleoclimatology, Ice cover, Glacier oscillation, Radioactive age determination, Pleistocene, Andes.

40-3396

Earth hummocks in the dry steppe and in the forest-steppe in central Mongolia. Kowalkowski, A., et al., *Studia geomorphologica Carpato-Balcica*, 1985, Vol.19, p.111-129, With Polish and Russian summaries. 29 refs. Borzyszkowski, J. Hummocks, Steppes, Forest land, Soil structure, Soil erosion, Frost mounds, Mongolia.

40-3397

Snow and avalanches in the Davos region. [Schnee und Lawinen in der Region Davos]. Föhn, P., et al., *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte*, 1985, No.48, p.29-43, In German. Beck, E. Snow surveys, Avalanche formation, Snow accumulation, Snow depth, Snow temperature, Snow cover, Switzerland—Davos.

40-3398

Snow and avalanche conditions in the Swiss Alps. [Schnee- und Lawinenverhältnisse im schweizerischen Alpengebiet]. Gliott, S., et al., *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte*, 1985, No.48, p.44-101, In German. Meister, R. Snow accumulation, Avalanche formation, Avalanche mechanics, Snow water equivalent, Snow depth, Snow density, Statistical analysis, Switzerland—Alps.

40-3399

Accidents and damage due to avalanches in the Swiss Alps. [Durch Lawinen verursachte Unfälle und Schäden im Gebiet der Schweizer Alpen]. Etter, H.-J., *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte*, 1985, No.48, p.102-177, In German. Avalanches, Accidents, Damage, Environmental impact, Switzerland—Alps.

40-3400

Avalanche accidents outside the Swiss Alps. [Lawinenunfälle ausserhalb der Schweizer Alpen]. Gliott, S., *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte*, 1985, No.48, p.178-185, In German. Avalanches, Accidents, Distribution, Statistical analysis.

40-3401

Avalanche catastrophe in Feb. 1984. [Die Lawinenkatastrophe vom Februar 1984]. Föhn, P., *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte*, 1985, No.48, p.186-193, 2 refs., In German. Avalanches, Accidents, Snow depth, Meteorological factors, Temperature effects, Snowfall, Wind factors, Mountains.

40-3402

Physical features of the Baltic Sea. Mälikki, P., et al., *Finnish marine research*, 1985, No.252, 110p., Refs. p.102-110. Tamsalu, R. Sea ice distribution, Bottom topography, Ice conditions, Runoff, Water flow, Salinity, River flow, Water temperature, Wind factors, Seasonal variations, Analysis (mathematics), Baltic Sea.

40-3403

Weathering of quartz grains in the liquefied horizon of permafrost solonchaks in the arid steppe zone, Central Mongolia. Kowalkowski, A., et al., *Catena*, June-Sep. 1985, 12(2/3), p.179-190, 19 refs. Mycielska-Dowgiallo, E. Permafrost weathering, Frozen rocks, Geochemistry, Geocryology, Steppes, Grain size, Mongolia.

40-3404

Monthly water balance and hydrological characteristics of river basins in Japan (Second report). Uehara, S., et al., *Japan. National Research Center for Disaster Prevention. Report*, 1985, No.35, p.155-228, In Japanese with English summary. 10 refs. Sato, T. Hydrology, Snow cover effect, Runoff, River basins, Water balance, Snow depth, Snowmelt, Rain, Precipitation (meteorology).

40-3405

Studies on the snow removing power of the rotary snow removing equipment. 1. The measurements of the snow removing power. Kuriyama, H., et al., *Japan. National Research Center for Disaster Prevention. Report*, 1985, No.35, p.241-276, In Japanese with English summary. 11 refs. Nohara, J., Kobayashi, T. Snow removal, Equipment, Cold weather performance, Tests.

40-3406

Example of measurement of the density of newly fallen snow at Sendai. Nakamura, T., *Japan. National Research Center for Disaster Prevention. Report*, 1985, No.35, p.335-343, In Japanese with English summary. 9 refs. Snowfall, Snow density, Air temperature, Wind direction, Wind velocity, Humidity.

40-3407

Report of the International Ice Patrol in the North Atlantic Ocean; Season of 1984. *U.S. Coast Guard. Report*, [1984], CG-188-39, Bulletin No.70, 74p., 2 refs. Sea ice distribution, Ice detection, Ice conditions, Meteorological data, Icebergs, Oceanography, Charts, Statistical analysis.

40-3408

Thermodynamic model of sea ice. [Termodinamičeskaja model' morskogo l'da]. Kagan, B.A., et al., *Akademiia nauk SSSR. Doklady*, 1986, 286(4), p.965-968, In Russian. 10 refs. Riabchenko, V.A., Safral, A.S. Sea ice distribution, Air water interactions, Phase transformations, Seasonal variations, Snowmelt, Mathematical models.

40-3409

Dissipation of mechanical energy in ice. [Dissipatsii mekhanicheskoi energii vo l'du]. Fomin, V.A., et al., *Akademiia nauk SSSR. Doklady*, 1985, 285(6), p.1362-1364, In Russian. 5 refs. Rodionov, V.N. Ice physics, Ice blasting, Wave propagation, Detonation waves, Absorption, Phase transformations.

40-3410

Hydrocarbon migration through perennially frozen strata. [Migratsiia uglevodorodov cherez tolschu mnogoletnemerzlykh porod]. Giotov, V.E., et al., *Akademiia nauk SSSR. Doklady*, 1985, 285(6), p.1443-1446, In Russian. 8 refs. Ivanov, V.V., Shilo, N.A. Hydrocarbons, Permafrost structure, Suprapermafrost ground water, Subpermafrost ground water, Methane, Capillarity, Microbiology, Mass transfer.

40-3411

Thermal erosion in the north of western Siberia. [Termoeroziia na severe Zapadnoi Sibiri]. Voskresenskii, K.S., et al., *Geomorfologiya*, Jan.-Mar. 1986, No.1, p.41-47, In Russian with English summary. 20 refs. Zemchikhin, V.E. Gullies, Soil erosion, Human factors, Economic development, Tundra, Cryogenic soils, Taiga.

40-3412

Dynamic tendencies of landscapes of the upper floodplain terraces in the upper Kolyma River valley. [Dinamicheskie tendentsii nadpolimnno-terrasovykh landshaftov doliny Verkhnei Kolymy]. Egorova, G.N., *Geograficheskoe obshchestvo SSSR. Izvestiia*, Jan.-Feb. 1986, 118(1), p.44-49, In Russian. 4 refs. Valleys, Floodplains, Permafrost beneath rivers, Landscape types, Hydrothermal processes, Soil erosion, Plant ecology, Ecosystems.

40-3413

Frazil ice formation. Ettema, R., et al., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1984, CR 84-18, 44p., ADA-147 425, 34 refs. Karim, M.F., Kennedy, J.F. Frazil ice, Ice formation, Heat transfer, Particle size distribution, Mathematical models, Tests, Turbulent flow, Water temperature, Computer programs, Supercooling.

This report investigates the influences of turbulence and water temperature on frazil ice formation. The rate and the quantity of frazil ice formed in a specified volume of supercooled water increase with both increasing turbulence intensity and decreasing water temperature. The influence of turbulence intensity on the rate of frazil ice formation, however, is more pronounced for larger initial supercooling. The turbulence characteristics of a flow affect the rate of frazil ice formation by governing the temperature to which the flow can be supercooled by influencing heat transfer from the frazil ice to surrounding water, and by promoting collision nucleation, particle and floc rupture and increasing the number of nucleation sites. Larger frazil ice particles formed in water supercooled to lower temperatures. The particles usually were disks, with diameters several orders greater than their thickness. Particle size generally decreased with increasing turbulence intensity. This report develops an analytical model, in which the rate of frazil ice formation is related to temperature rise of a turbulent volume of water from the release of latent heat of fusion of liquid water to ice. Experiments conducted in a turbulence jar with a heated, vertically oscillating grid served both to guide and to calibrate the analytical model as well as to afford insights into frazil ice

formation. The formation of frazil ice was studied for temperatures of supercooled water ranging from -0.9 to -0.05 C.

#### 40-3414

**Secondary ice particle production during rime growth: the effect of drop size distribution and rimer velocity.**

Mossop, S.C., *Royal Meteorological Society, London. Quarterly journal*, Oct. 1985, 111(470), p.1113-1124, 19 refs.

**Ice growth, Supercooled clouds, Hoarfrost, Particle size distribution, Cloud droplets, Hail clouds.**

#### 40-3415

**Introduction to ice in the polar oceans.** Maykut, G.A., *University of Washington. Applied Physics Laboratory. Report*, Sep. 1985, APL-UW 8510, 107p., Refs. p.99-107.

**Sea ice distribution, Ice formation, Ice composition, Ice physics, Ice mechanics, Heat balance, Mass balance.**

A general review is given of the formation, growth, distribution, properties, and behavior of sea ice in the polar oceans, with special emphasis on factors that directly effect biological activity beneath the ice. Seasonal and perennial ice zones of the two polar regions are compared and differences are pointed out. Ice formation mechanisms differ to some degree in southern polar waters. In this regard, the widespread occurrence of frazil ice in the Weddell Sea and other antarctic waters is discussed. Summer ice decay in the antarctic area seems more related to other differences in meteorological variables that control the surface heat balance, than purely to air temperature considerations. The effects of biological activity on sea ice strength are pointed out for southern regions where algal colonies of considerable density inhabit the ice pack.

#### 40-3416

**Towards a theory of temperate glaciers. Dynamics and thermodynamics of phase boundaries between ice and water.**

Alts, T., et al, *Zurich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1986, No.82, 183p., With German and French summaries. Refs. p.135-139.

**Glacier flow, Ice mechanics, Boundary layer, Ice water interface, Thermodynamics, Freeze thaw cycles, Phase transformations, Glacier mass balance, Analysis (mathematics).**

#### 40-3417

**Dynamics of powder-snow avalanches.**

Scheiwiller, T., *Zurich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1986, No.81, 115p., With German and French summaries. Refs. p.112-115.

**Avalanche mechanics, Avalanche formation, Shear flow, Turbulent flow, Snow mechanics, Mathematical models, Velocity, Air entrainment, Theories.**

#### 40-3418

**Hydraulic structures.**

Grishin, M.M., ed, Moscow, Mir Publishers, 1982, 2 vols., Translation of Gidrotekhnicheskie sooruzheniia. Moscow, Vysshiaia shkola, 1979. 143 refs. DLC TC180.G4613

**Hydraulic structures, Temperature effects, Seismology, Concrete structures, Dams, Earth dams, Rock fills, Earth fills, Design, Construction materials, Foundations, Soils, River diversion, Flow control.**

#### 40-3419

**Drilling large diameter wells in permafrost.** (Burenii skvazhin bol'shogo diametra v vechnomerzlykh gruntakh). Verkhoturov, B.F., et al, *Mekhanizatsiia stroitel'stva*, Feb. 1986, No.2, p.16-17, In Russian.

**Foundations, Piles, Drilling, Pile driving, Permafrost beneath structures, Drills.**

#### 40-3420

**Problems of funding availability and design requirements for construction in the Far North.** (Problemy kreditno-raschetnykh otnoshenii v stroitel'stve na Krafnem Severe).

Kolesnik, A.A., et al, *Stroitel'stvo truboprovodov*, Feb. 1986, No.2, p.36-38, In Russian.

**Continuous permafrost, Transportation, Construction materials, Construction equipment, Construction costs, USSR—Tyumen'.**

#### 40-3421

**Semi-automatic welding assembly "Styk-04": an asset for intensified pipeline construction.** (Ispol'zovanie kompleksa poluavtomaticheskoi svarki "Styk-04"—rezerv intensifikatsii liniel'nogo stroitel'stva). Sidorenko, V.P., et al, *Stroitel'stvo truboprovodov*, Feb. 1986, No.2, p.43-44, In Russian.

**Gas pipelines, Pipe laying, Permafrost beneath structures, Welding, Installation, Construction equipment, Earthwork.**

#### 40-3422

**Building pipelines of plastic materials in Yamburg.** (Stroitel'stvo plastmassovykh truboprovodov v Iam-burge).

Shemakov, E.M., et al, *Stroitel'stvo truboprovodov*, Feb. 1986, No.2, p.46, In Russian.

**Pipe laying, Permafrost control, Utilities, Permafrost beneath structures, Construction materials, Plastics, Steel, Thermal insulation.**

#### 40-3423

**Railroads for economic development of undeveloped regions.** (Zheleznye dorogi dlia khoziaistvennogo osvoeniia maloobzhitnykh raionov).

Tkachevskii, I.D., *Transportnoe stroitel'stvo*, Mar. 1986, No.3, p.4-6, In Russian. 7 refs.

**Economic development, Permafrost beneath structures, Railroads, Design, Permafrost distribution, Cost analysis.**

#### 40-3424

**Peculiarities of snow accumulation near bridges in northern West Siberia.** (Osobennosti snegootlozhenii u mostov na severe Zapadnoi Sibiri). Veinblat, B.M., et al, *Transportnoe stroitel'stvo*, Mar. 1986, No.3, p.15-16, In Russian.

**Bridges, Foundations, Roads, Piers, Soil temperature, Permafrost beneath structures, Design, Snowdrifts, Snow accumulation.**

#### 40-3425

**Seasonal dynamics of Fe, Al and Si compounds in sandy soils of the southern taiga, European USSR.** Tolchel'nikov, I.U.S., et al, *Soviet soil science*, Sep.-Oct. 1985, No.5, p.32-48, Translated from Pochvovedenie, 1985, No.8, p.10-25. 12 refs.

**Soils, Podsol, Sands, Cryogenic soils, Soil composition, Metals, Soil chemistry, Topographic effects, Seasonal variations.**

#### 40-3426

**Characteristics of the ice and thermal regime of the Gunt River in connection with the design of the Pamir hydroelectric station.**

Sherman, S.M., *Hydrotechnical construction*, Mar. 1985 (Pub. Sep. 85), 19(3), p.141-145, Translated from Gidrotekhnicheskoe stroitel'stvo. 4 refs.

**River ice, Hydraulic structures, Electric power, Ice conditions, Thermal regime.**

#### 40-3427

**Calculation of the size of ice hummocks.**

Kozitskii, I.E., *Hydrotechnical construction*, Mar. 1985 (Pub. Sep. 85), 19(3), p.146-149, Translated from Gidrotekhnicheskoe stroitel'stvo. 2 refs.

**Ice breakup, Drift, Ice floes, Hummocks, Ice loads, Shores, Icebound rivers, Icebound lakes, Hydraulic structures.**

#### 40-3428

**Characteristics of hummocking processes of the ice cover of the north Caspian Sea.**

Bukharitsin, P.I., *Water resources*, Nov.-Dec. 1984 (Pub. Sep. 85), 11(6), p.604-611, Translated from Vodnye resursy. For Russian original see 39-1174. 8 refs.

**Sea ice distribution, Polynyas, Ice floes, Pressure ridges.**

#### 40-3429

**Geographic problems of the World Ocean.** (Geograficheskie problemy Mirovogo okeana). Sal'nikov, S.S., ed, Leningrad, 1985, 157p., In Russian. For selected paper see 40-3430.

**Shores, Ice edge, Climatic changes, Sea ice distribution, Ice conditions, Snow cover distribution, Drift, Climatic factors, Air water interactions, Heat flux, Landscape development, Vegetation.**

#### 40-3430

**Sea ice as an indicating and controlling factor of natural conditions in polar countries.** (Morskoe l'dy kak indikator i regulator prirodnykh uslovii poliarnykh stran).

Zakharov, V.F., et al, *Geograficheskie problemy Mirovogo okeana* (Geographic problems of the World Ocean) edited by S.S. Sal'nikov, Leningrad, 1985, p.72-79, In Russian. 15 refs.

**Sea ice distribution, Air water interactions, Snow cover distribution, Ice edge, Heat flux, Ice cover thickness, Climatic factors, Landscape development, Vegetation, Climatic changes, Air temperature, Water temperature.**

#### 40-3431

**Blasting of ground and rocks.** (Vzryv v gruntakh i gornykh porodakh). Turuta, N.U., ed, Kiev, Naukova dumka, 1985, 180p., For selected paper see 40-3432. 2 refs.

**Blasting, Land reclamation, Frozen fines, Sands, Explosion effect, Loams, Wave propagation.**

#### 40-3432

**Blasting technique of frozen ground excavation.** (O razrushenii merzlykh gruntov vzryvnym sposobom). Frash, G.B., Vzryv v gruntakh i gornykh porodakh (Blasting of ground and rocks) edited by N.U. Turuta, Kiev, Naukova dumka, 1985, p.124-128, In Russian. 2 refs.

**Blasting, Land reclamation, Frozen fines, Sands, Explosion effect, Loams, Wave propagation.**

#### 40-3433

**International symbols for sea-ice maps and the nomenclature of sea ice.** (Mezhdunarodnaia simbolika dlia morskikh ledovykh kart i nomenklatura morskikh l'dov). Kurskikh, B.A., ed, Leningrad, Gidrometeoizdat, 1984, 56p., In Russian with abridged English table of contents enclosed.

**Maps, Sea ice, Terminology, Dictionaries, Ice navigation, Ice reporting, Ice surveys, Mapping.**

#### 40-3434

**Changes in geological media and their forecasting.** (Izmeneniia geologicheskoi sredy i ikh prognoz). Trzhtsin'skii, I.U.B., ed, Novosibirsk, Nauka, 1985, 151p., In Russian with abridged English table of contents enclosed. Refs. p.143-149.

**Engineering geology, Permafrost hydrology, Permafrost distribution, Slope processes, Permafrost forecasting, Landslides, Thermokarst, Landscape types, Mudflows, Human factors, Permafrost beneath rivers.**

#### 40-3435

**Soils of the World. Volume II Soil geography.** Glazovskaia, M.A., Russian Translation Series, No.10, Rotterdam, A.A. Balkema, 1986, 401p., Translation of: Pochvy Mira—Geografii Pochv, Moscow, Universitet, 1973. Refs. p.397-401.

**Geography, Microbiology, Soil mapping, Soil erosion, Soil patterns, Polar regions, Landscape types, Soil structure, Soil classification, Soil chemistry.**

This university textbook comprises a general part dealing with patterns of soil geography, and a specific part dealing with soil cover of the continents. Chapter 8 covers weathering and soil formation in polar deserts of the Antarctic and the Arctic (p.134-142) emphasizing differences in the two polar regions.

#### 40-3436

**Pleistocene and Holocene seismic stratigraphy between the Canning River and Prudhoe Bay, Beaufort Sea, Alaska.**

Wild, S., et al, *U.S. geological Survey. Open-File Report*, 1985, No.85-549, 50p., Refs. p.43-46.

**Geological surveys, Seismic reflection, Sedimentation, Sea ice, Ice mechanics, Acoustic measurement, Paleoclimatology, Pleistocene, Measuring instruments, United States—Alaska—Prudhoe Bay.**

#### 40-3437

**Northern engineering: organization and policy with report of the 1985 conference. Eighth annual conference: Boreal Institute for Northern Studies, University of Alberta, Edmonton, Alberta, April 25-27, 1985. Association of Canadian Universities for Northern Studies, Dec. 1985, 110p., In English and French. Refs. passim.**

**Engineering, Cold weather construction, Polar regions, Meetings, Canada.**

- 40-3438  
Mercury in snow cover and rainfall in Finland 1983-1984.  
Rekolainen, S., et al, Helsinki. *Vesientutkimuslaitoksen julkaisu*, 1986, No.65, p.3-10, With Finnish summary. 37 refs.  
Verta, M., Järvinen, O.  
Snow impurities, Snow composition, Chemical analysis, Pollution, Snow cover, Rain, Finland.
- 40-3439  
Measurement and analysis of strainmeter data from Adams Island, November 1982 to June 1983.  
Stander, E., Memorial University of Newfoundland. *Centre for Cold Ocean Resources Engineering. C-CORE publication*, Apr. 1985, No.85-1, 34p.  
Ice deformation, Ice strength, Strain measuring instruments, Ice crystal structure, Freezing, Ice cover thickness, Ice sheets.
- 40-3440  
Dynamic behavior of a floating, cable-moored platform continuously impacted by ice floes.  
Matsuishi, M., et al, Iowa University. *Iowa Institute of Hydraulic Research. Report*, Nov. 1985, No.294, 150p., 22 refs.  
Ettema, R.  
Ice loads, Floating structures, Ice floes, Ice conditions, Moorings, Impact strength, Analysis (mathematics), Tests, Models, Ice mechanics.
- 40-3441  
Model tests on ice-rubble size and ship resistance in ice rubble.  
Ettema, R., et al, Iowa University. *Iowa Institute of Hydraulic Research. Report*, 1985, No.293, 85p., 17 refs.  
Matsuishi, M., Kitazawa, T.  
Ice navigation, Ice strength, Metal ice friction, Ice conditions, Ships, Floating ice, Models, Velocity, Tests.
- 40-3442  
Numerical modeling of wind-drift of ice in the Azov Sea. (Chislennoe modelirovanie vetrovogo drefa l'da v Azovskom more).  
Taran, B.M., Moscow. *Gosudarstvennyi okeanograficheskii institut. Trudy*, 1985, Vol.163, p.28-32, In Russian. 3 refs.  
Ice formation, Sea ice distribution, Pack ice, Drift, Wind factors, Ice conditions, Mathematical models.
- 40-3443  
Performance of structures built of reinforced plastic materials under extreme conditions. (Rabotosposobnost' konstruktov iz armirovannykh plastmass v ekstremal'nykh usloviakh).  
Urzhumtsev, I.U.S., ed, Yakutsk, Yakutskii filial SO AN SSSR, 1985, 127p., In Russian. For selected papers see 40-3444 through 40-3447. Refs. passim.  
Construction materials, Polymers, Fiberglass, Reinforced plastics, Cold weather performance, Pipelines, Permafrost beneath structures.
- 40-3444  
Performance of biplastic pipes in northern regions. (Effektivnost' primeneniia biplastmassovykh trub v severnom regione).  
Riabets, I.U.S., Rabotosposobnost' konstruktov iz armirovannykh plastmass v ekstremal'nykh usloviakh (Performance of structures built of reinforced plastics, under extreme conditions) edited by I.U.S. Urzhumtsev, Yakutsk, Yakutskii filial SO AN SSSR, 1985, p.15-22, In Russian. 7 refs.  
Polymers, Pipelines, Reinforced plastics, Permafrost, Construction materials, Cold weather performance.
- 40-3445  
Solidity limit and the strength of cross-reinforced composite materials on an epoxy-resin base, at natural low temperatures. (Predel monolitnosti i prochnost' perekrestno armirovannykh kompozitov na osnove epoksidnogo svyazushchego v usloviakh estestvenno nizkikh temperatur).  
Rodionov, A.K., et al, Rabotosposobnost' konstruktov iz armirovannykh plastmass v ekstremal'nykh usloviakh (Performance of structures built of reinforced plastics, under extreme conditions) edited by I.U.S. Urzhumtsev, Yakutsk, Yakutskii filial SO AN SSSR, 1985, p.23-35, In Russian. 16 refs.  
Davydova, N.N., Iakovleva, V.V., Kuz'min, S.A.  
Plastics, Construction materials, Cold weather performance.
- 40-3446  
Calculating compressive and tensile strength of an anisotropic cylinder at low temperatures. (Raschet na prochnost' anizotropnogo tsilindra pri rastizhenii i szhatii v usloviakh nizkikh temperatur).  
Rodionov, A.K., Rabotosposobnost' konstruktov iz armirovannykh plastmass v ekstremal'nykh usloviakh (Performance of structures built of reinforced plastics, under extreme conditions) edited by I.U.S. Urzhumtsev, Yakutsk, Yakutskii filial SO AN SSSR, 1985, p.49-53, In Russian. 3 refs.  
Construction materials, Reinforced plastics, Cold weather performance.
- 40-3447  
Selecting structural parameters of fiberglass pressure pipes. (Vybor konstruktivnykh parametrov napornykh trub iz stekloplastika).  
Bulmanis, V.N., et al, Rabotosposobnost' konstruktov iz armirovannykh plastmass v ekstremal'nykh usloviakh (Performance of structures built of reinforced plastics, under extreme conditions) edited by I.U.S. Urzhumtsev, Yakutsk, Yakutskii filial SO AN SSSR, 1985, p.54-64, In Russian. 10 refs.  
Ignat'ev, V.E.  
Pipelines, Permafrost beneath structures, Fiberglass, Cold weather performance, Analysis (mathematics).
- 40-3448  
Laboratory methods of studying frozen rocks. (Laboratornye metody issledovaniia merzlykh porod).  
Ershov, E.D., ed, Moscow, Universitet, 1985, 351p., In Russian with English table of contents enclosed.  
Rheology, Cryogenic structures, Unfrozen water content, Cryogenic textures, Frozen rocks, Permafrost physics, Physical properties, Mechanical properties, Test chambers, Test equipment, Measuring instruments.
- 40-3449  
Regularities in the flow behavior of simulated granular pressure-ridge ice. (Lois de comportement et de fluage de la glace granulaire simulée de crêtes de pression).  
Nadreau, J.P., et al, Quebec (City) Université Laval. *Rapport*, Sep. 1985, GCS-85-05, 376p., In French. Refs. p.303-317.  
Michel, B.  
Pressure ridges, Ice physics, Ice crystal structure, Ice mechanics, Ice cracks, Ice salinity, Ice density, Thermal properties, Computer programs, Analysis (mathematics).
- 40-3450  
Ice loads and motions experienced by a floating, moored platform in mushy ice rubble.  
Matsuishi, M., et al, Iowa University. *Iowa Institute of Hydraulic Research. Report*, Nov. 1985, No.295, 109p., 16 refs.  
Ettema, R.  
Ice loads, Floating structures, Ice mechanics, Ice conditions, Impact strength, Moorings, Ice formation, Tests.
- 40-3451  
Use of combined surfactant additives in concrete of hydraulic structures.  
Sudakov, V.B., et al, Hydrotechnical construction, June 1985 (Pub. Dec. 85), 19(6), p.316-320, Translated from *Gidrotekhnicheskoe stroitel'stvo*. 11 refs.  
Winter concreting, Concrete hardening, Concrete admixtures, Frost resistance, Hydraulic structures.
- 40-3452  
Growth of snow-retaining plantations with common oak in the northeastern part of its area. (Sostoianie i rost snegozaderzhivaiushchikh nasazhdenii s dubom chereshchatym v severo-vostochnoi chasti ego areala).  
Iakovlev, A.S., Russia. *Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshihkh uchebnykh zavedenii. Lesnoi zhurnal*, 1986, No.1, p.118-120, In Russian.  
Protective vegetation, Snow retention, Forestry.
- 40-3453  
Mechanization of technological processes in blasting. (Mekhanizatsiia tekhnologicheskikh protsessov vzryvnykh rabot).  
Skorobogatov, V.M., ed, *Vzryvnoe delo*, 1985, No.87/44, 272p., In Russian. For selected articles see 40-3454 and 40-3455. Refs. passim.  
Kukib, B.N., ed, Zakalinskii, V.M., ed.  
Placer mining, Permafrost, Blasting, Explosives, Storage.
- 40-3454  
Increasing the effectiveness of using igdante in placer mining in the northeastern USSR. (Povyshenie effektivnosti primeneniia igdanta na priiskakh Severo-Vostoka SSSR).  
Egupov, A.A., et al, *Vzryvnoe delo*, 1985, No.87/44, p.195-201, In Russian. 2 refs.  
Samolov, V.I., Zhuchenko, E.I.  
Placer mining, Permafrost, Blasting, Explosives.
- 40-3455  
Mechanized application of locally produced explosives in the "Medvezhiy Ruchey" mine of the Noril'sk combine. (Opyt mekhanizirovannogo primeneniia VV mestnogo izgotovleniia na rudnike "Medvezhiy Ruchey" Noril'skogo kombinata).  
Mamashev, I.U.P., et al, *Vzryvnoe delo*, 1985, No.87/44, p.220-224, In Russian.  
Placer mining, Permafrost, Blasting, Explosives, Storage.
- 40-3456  
Oceanology of Arctic Ocean. (Okeanologiya Severnogo Ledovitogo okeana).  
Dukhin, E.N., ed, Leningrad. *Arkticheskii i antarkicheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.389, 128p., In Russian. For selected papers see 40-3457 through 40-3461. Refs. passim.  
Kochetov, S.V., ed.  
Frazil ice, Ice cover thickness, Oceanographic surveys, Ice sampling, Sea ice distribution, Ice cores, Ocean currents, Sea water freezing, Air water interactions, Ice growth, Subglacial observations, Stratification.
- 40-3457  
Heat transfer between ocean and the atmosphere through thin ice of the Arctic Ocean. (K otsenke teploobmena mezhdru atmosferoi i okeanom cherez tonkie l'dy v Arkticheskoi basseine).  
Kochetov, S.V., Leningrad. *Arkticheskii i antarkicheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.389, p.11-15, In Russian. 8 refs.  
Air water interactions, Ice cover thickness, Sea ice distribution, Heat transfer, Air temperature, Charts.
- 40-3458  
Changes in the thermohaline structure of Arctic surface waters. (Ob izmenchivosti termokhalinnoi struktury poverkhnostnykh arkticheskikh vod).  
Bannov-Baikov, I.U.L., et al, Leningrad. *Arkticheskii i antarkicheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.389, p.23-26, In Russian. 6 refs.  
Bulaiov, L.V.  
Surface waters, Sea water freezing, Air water interactions, Heat transfer, Water chemistry, Ice growth, Ice cover thickness, Stratification, Arctic Ocean.
- 40-3459  
Experimental study of the thawing rate of frazil ice in the sea. (Eksperimental'noe issledovanie skorosti vnutrivodnogo taniia l'da v more).  
Beliakov, L.N., Leningrad. *Arkticheskii i antarkicheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.389, p.35-39, In Russian. 6 refs.  
Ice melting, Frazil ice, Ice sampling, Ice cores, Water temperature, Sea ice distribution.
- 40-3460  
Medium-scale subglacial currents in the Arctic Ocean. (Mezomasshtabnye podpoverkhnostnye techeniia v Arkticheskoi basseine).  
Beliakov, L.N., et al, Leningrad. *Arkticheskii i antarkicheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.389, p.46-51, In Russian. 10 refs.  
Volkov, V.A.  
Ocean currents, Subglacial drainage, Oceanographic surveys, Drift stations.
- 40-3461  
Poincare waves beneath ice cover and in the ice-free water. (Volny Puankare pod ledianym pokrovom i na chistoii vode).  
Kulakov, M.I.U., et al, Leningrad. *Arkticheskii i antarkicheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.389, p.59-71, In Russian. 3 refs.  
Legen'kov, A.P.  
Water waves, Wave propagation, Subglacial observations, Oceanographic surveys.
- 40-3462  
Size and shape of ice floes in the Baltic Sea in spring. (Lepppranta, M., *Geophysica*, 1983, 19(2), MP 2061, p.127-136, 4 refs.  
Ice floes, Sea ice distribution, Remote sensing, Ice melting, Aerial surveys, Seasonal variations, Photography, Baltic Sea.

40-3463

Proposed method to improve springtime areal snow water equivalent maps by using satellite imagery. Kuittinen, R., et al, *Geophysica*, 1983, 19(2), p.193-209, 10 refs.

Perdila, J.

Snow water equivalent, Remote sensing, Mapping, Vegetation factors, Snow melting, Aerial surveys, Finland.

40-3464

Mathematical simulation of nitrogen interactions in soils.

Selim, H.M., et al, *Mathematics and computers in simulation*, June 1983, 25(3), MP 2051, p.241-248, 21 refs.

Mehran, M., Tanji, K.K., Iskandar, I.K.

Soil chemistry, Gas inclusions, Waste disposal, Ground water, Nitrogen, Water flow, Interfaces, Mathematical models, Convection, Agriculture.

Four mathematical models were evaluated for their ability to describe the fate of nitrogen (N) in the soil environment. The first model is a general one which accounts for convective-dispersive N transport under transient water flow conditions with active N uptake by plants. Model II considers N transport to be only of the convective type, whereas model III considers N uptake as a passive process. In contrast, model IV considers N transport under conditions of steady water flow in the convective model (II) and the steady state model (IV) are inferior in describing N flow in the soil system as well as the convective dispersive transport mechanisms must be considered for reliable simulation of N behavior in the soil environment.

40-3465

Isothermal compressibility of water mixed with Na-saturated montmorillonite.

Oliphant, J.L., et al, *Journal of colloid and interface science*, Sep. 1983, 95(1), MP 2066, p.45-50, 14 refs.

Low, P.F.

Water chemistry, Compressive properties, Clays, Freeze drying, Thermodynamics, Minerals, Analysis (mathematics).

40-3466

Measurement of the resistance of imperfectly elastic rock to the propagation of tensile cracks.

Peck, L., et al, *Journal of geophysical research*, Aug. 10, 1985, 90(B9), MP 2052, p.7827-7836, 35 refs.

Nolen-Hockema, R.C., Barton, C.C., Gordon, R.B. Rocks, Crack propagation, Elastic properties, Tensile properties, Fracturing, Strength, Tests.

Laboratory tests confirm the accuracy of the compliance equations for wedge-loaded, linearly elastic, double cantilever beam test specimens used for the measurement of fracture energy. It is shown that there are significant discrepancies with theory in tests on rock specimens of the same design. The dependence of the compliance on the length of the crack in the test specimen is not correctly predicted by theory for the experiments done on rock. The axial load applied to the arms of the double cantilever beam as a result of wedge loading reduces Young's modulus by as much as 44% and decreases the measured elastic anisotropy of specimens of granite. The experiments show that useful measurements of G(I) can be made on rock provided that the Young's modulus used in the determination of G(I) is measured on the same specimen under the same conditions of loading as are used in the fracture experiments.

40-3467

Thermal insulation device.

Lemerrier, G., *U.S. Patent Office. Patent*, Dec. 27, 1983, 8 col. USP-4,423,003.

Thermal insulation, Sealing, Nuclear power, Equipment.

40-3468

Electric heating apparatus for de-icing pipes.

Varney, P.V., Sr., *U.S. Patent Office. Patent*, Dec. 27, 1983, 6 col. USP-4,423,311.

Electric heating, Frozen liquids, Pipes (tubes), Freezing, Countermeasures, Equipment.

40-3469

Snow plow.

Blau, J.R., *U.S. Patent Office. Patent*, Apr. 3, 1984, 8 col. USP-4,439,939.

Snow removal, Motor vehicles, Road maintenance, Winter maintenance.

40-3470

Freeze-proof livestock watering device and method.

Lilyer, J.R., *U.S. Patent Office. Patent*, Apr. 3, 1984, 6 col. USP-4,440,112.

Thermal insulation, Heating, Reservoirs, Turbulent flow, Freezing, Countermeasures, Thermostats, Winter maintenance.

40-3471

Polyethylene-polybutadiene blend.

Kent, E.G., *U.S. Patent Office. Patent*, Dec. 27, 1983, 6 col. USP-4,423,181.

Protective coatings, Polymers, Low temperature tests, Cold tolerance, Impact strength.

40-3472

Apparatus and method for measuring concentrations of supercooled liquid water.

Hill, G.M., et al, *U.S. Patent Office. Patent*, Apr. 10, 1984, 18 col. USP-4,441,363.

Chadwick, D.G.

Supercooled clouds, Unfrozen water content, Ice accretion, Measuring instruments, Vibration, Meteorological instruments, Radiosondes.

40-3473

Means for removing snow from road.

Huotari, V.E., *U.S. Patent Office. Patent*, Apr. 24, 1984, 4 col. USP-4,443,958.

Snow removal, Ice removal, Winter maintenance, Road maintenance.

40-3474

Stefan problem. [Zadacha Stefana].

Metmanov, A.M., Novosibirsk, Nauka, 1986, 239p., In Russian with abridged English table of contents enclosed. 223 refs.

Mathematical models, Melting, Crystal growth, Phase transformations, Stefan problem.

40-3475

Terminology of glacial geomorphology. [Terminologiya glial'nol'noi geomorfologii].

Timofeev, D.A., et al, Moscow, Nauka, 1986, 256p., In Russian with English table of contents enclosed. Refs. p.205-214.

Makkaveev, A.N.

Terminology, Glaciology, Geomorphology.

40-3476

Snow melioration and the climate of soil. [Snezhnaia melioratsiia i klimat pochvy].

Shul'gin, A.M., Leningrad, Gidrometeoizdat, 1986, 70p., In Russian with English table of contents enclosed. 85 refs.

Land development, Soil water migration, Snow water equivalent, Snow cover distribution, Snow depth, Snow retention, Protective vegetation, Soil temperature, Freeze thaw cycles, Frost penetration.

40-3477

Thermosyphons in northern construction. [Termosifony v severnom stroitel'stve].

Makarov, V.I., Novosibirsk, Nauka, 1985, 169p., In Russian with abridged English table of contents enclosed. Refs. p.166-167.

Permafrost thermal properties, Permafrost control, Thermopiles, Design, Heat transfer, Foundations, Permafrost bases.

40-3478

Lichen flora of the Sangilen Highlands. [Likhencflora nagorn'ia Sangilen].

Sedel'nikova, N.V., Novosibirsk, Nauka, 1985, 180p., In Russian with English table of contents enclosed. Refs. p.172-179.

Lichens, Plant ecology, Alpine landscapes, Climate, Cryogenic soils, Vegetation patterns, Ecosystems.

40-3479

Hydrological investigations made during expeditions. [Ekspeditsionnye gidrologicheskie issledovaniia].

Vodogreiskii, V.E., et al, Leningrad, Gidrometeoizdat, 1985, 231p., In Russian with abridged English table of contents enclosed. 63 refs.

Krestovskii, O.I., Sokolov, B.I., Expeditions, Hydrology, Glacial hydrology, Snow hydrology, Surveys.

40-3480

Utah's Great Salt Lake—a classic lake effect snowstorm.

Carpenter, D.M., *Weatherwise*, Dec. 1985, 38(6), p.309-311.

Snowstorms, Snowfall, Topographic effects, Snow accumulation, Wind direction, United States—Utah—Great Salt Lake.

40-3481

What becomes of a winter snowflake.

Colbeck, S.C., *Weatherwise*, Dec. 1985, 38(6), MP 2060, p.312-215.

Snowflakes, Snow crystal structure, Snow crystal growth, Temperature gradients, Temperature effects, Vapor diffusion.

40-3482

Weather in the small scale. *Weatherwise*, Dec. 1985, 38(6), p.316-317.

Snow crystal structure, Microstructure, Scanning electron microscopy, Photography.

40-3483

On zero-inertia and kinematic waves.

Katopodes, N.D., *American Society of Civil Engineers. Hydraulics Division. Journal*, Nov. 1982, 108(HY11), MP 2053, p.1381-1387, 5 refs.

Discussion by M.G. Ferrick, *Journal of hydraulic engineering*, Mar. 1984, 110(3), p.352-357, 8 refs.

Ferrick, M.G.

River flow, Wave propagation, Water waves, Channels (waterways), Mathematical models.

40-3484

Vacuum thermal insulation panel.

Young, J.R., et al, *U.S. Patent Office. Patent*, Apr. 24, 1984, 6 col. USP-4,444,821.

Schreck, R.M.

Thermal insulation, Materials, Thermal conductivity.

40-3485

Camouflage covering for snowy soils.

Robicci, P.L., *U.S. Patent Office. Patent*, Sep. 4, 1984, 6 col. USP-4,469,745.

Military facilities, Covering, Coatings, Snow cover effect.

40-3486

Microwave ice accretion meter.

Magenheim, B., et al, *U.S. Patent Office. Patent*, Sep. 4, 1984, 14 col. USP-4,470,123.

Rocks, J.K.

Ice accretion, Microwaves, Measuring instruments, Ice cover thickness, Ice growth.

40-3487

Offshore platform structure intended to be installed in arctic waters, subjected to drifting icebergs.

Kure, G., et al, *U.S. Patent Office. Patent*, Sep. 11, 1984, 8 col. USP-4,470,725.

Jenssen, D.N., Naesje, K.

Offshore structures, Ice loads, Drift, Icebergs, Concrete structures, Design.

40-3488

Frost sensor.

Goto, N., *U.S. Patent Office. Patent*, Sep. 20, 1983, 12 col. USP-4,404,852.

Ice detection, Frost, Acoustic measurement, Freezers.

40-3489

Method for heat absorption from a sea bottom or the like.

Backlund, E.L., *U.S. Patent Office. Patent*, Oct. 4, 1983, 4 col. USP-4,407,351.

Pipeline freezing, Thermal insulation, Turbulent flow, Laminar flow, Heat recovery, Ocean bottom.

40-3490

Ice-breaking and conveying system.

Wagner, J.C., *U.S. Patent Office. Patent*, Oct. 18, 1983, 6 col. USP-4,409,918.

Ice breaking, Icebreakers, Channels (waterways), Ice conditions, Ice navigation.

40-3491

Atmospheric methane in the recent and ancient atmospheres: concentrations, trends, and interhemispheric gradient.

Rasmussen, R.A., et al, *Journal of geophysical research*, Dec. 20, 1984, 89(D7), p.11,599-11,605, 18 refs.

Khalil, M.A.K.

Air pollution, Ice cores, Bubbles, Ice composition.

The concentrations of methane in the old and ancient atmospheres of the earth was deduced by analyzing some 80 ice core samples from both polar regions. Concentration of methane 250 years ago and earlier was only 700 ppbv, or about 45% of present levels. A rapid and significant increase of atmospheric methane started about 150 years ago. The rate of increase has escalated since then and is about 1.3%/yr at present. The concentration of methane in the atmosphere 250 years ago and earlier, when methane was not increasing, was 10% higher in the Arctic as compared to the Antarctic. This finding is consistent with the expected ratio of about 1.07-1.11 obtained from a global mass balance model and the primarily land-based natural sources of methane, estimated to be about 280 Tg/yr, which may have been the only sources several hundred years ago, when human activities did not contribute significantly to the global methane cycle. (Auth.)

40-3492

Bismuth-207 in environmental samples.

Komura, K., *Radioisotopes*, Oct. 1985, 34(10), p.555-558, In Japanese with English summary. 6 refs.

Soil pollution, Ice sheets, Fallout, Radioactivity, Antarctica—Scott Station.

Measurements of fallout Bi-207 in environmental samples are reported for water filters used at Scott Base and for surface soils containing high amount of fallout nuclides. The level of Bi-207 in these samples was nearly the same or a little higher than that of fallout Co-60 and the Bi-207/Cs-137 activity ratios were in the range of 0.001-0.018. Contamination of bismuth by Bi-207 was found in "high purity" bismuth and its level was 1.9 mBq/g. Bi. (Auth.)

- 40-3493**  
Distribution and regime of mountain glaciers. [Raspređenje i režim gornjkh lednikov]. Glazyrin, G.E., Leningrad, Gidrometeoizdat, 1985, 181p., In Russian with English table of contents enclosed. 171 refs.  
Mountain glaciers, Glacier alimentation, Glacier ice, Distribution, Mathematical models, Thermal regime, Ablation, Floods, Glacial hydrology.
- 40-3494**  
Means of extending navigation on internal waterways. [Sredstva prodleniya navigatsii na vnutrennikh vodnykh putyakh]. Zuev, V.A., Leningrad, Sudostroenie, 1986, 207p., In Russian with English table of contents enclosed. 127 refs.  
Icebound rivers, Air cushion vehicles, Icebound lakes, Ice navigation, Icebreakers, Transportation, Ice cover thickness, Ice cover strength, Ice mechanics, Models.
- 40-3495**  
Continental lithogenesis and the formation of placer deposits in the cryolithozone. [Kontinental'nyy litogenez i rossypobrazovanie v kriolitozone]. Shumilov, I.U.V., Novosibirsk, Nauka, 1986, 173p., In Russian with English table of contents enclosed. Refs. p.163-170.  
Placer mining, Minerals, Formation, Permafrost, Geochemistry, Geocryology, Sedimentation, Hydrothermal processes.
- 40-3496**  
Onset of Tertiary continental glaciation in the Antarctic Peninsula sector (West Antarctica). Birkenmajer, K., *Acta geologica polonica*, 1985, 35(1-2), p.1-31, With Polish summary. Refs. p.27-30.  
Fossils, Glaciation, Paleobotany, Geochronology, Glacial geology, Paleoclimatology, Glacial deposits, Antarctica—Antarctic Peninsula, Antarctica—King George Island.  
The onset of continental glaciation (ice-sheet at sea level) in the Antarctic Peninsula sector, slightly post-dates the Oligocene/Miocene boundary. Early Miocene brachiopod-bearing shallow-marine sediments contain pieces of carbonized wood, and are still devoid of convincing glacial-climate indicators. The succeeding Early Miocene highly fossiliferous glacio-marine strata are crowded with iceberg-rafted debris, often of large dimensions, of antarctic continent provenance. Andesite dykes which cut through these strata have been K-Ar dated at about 20 Ma. The K-Ar dating of the geological events leaves a narrow bracket for the onset of continental glaciation in the Antarctic Peninsula sector at between 24 and 20 Ma. (Auth. mod.)
- 40-3497**  
Airfoil aerodynamics in icing conditions. Bragg, M.B., et al., *Journal of aircraft*, Jan. 1986, 23(1), p.76-81, 21 refs.  
Gregorek, G.M., Lee, J.D.  
Aircraft icing, Ice accretion, Air flow, Aerodynamics, Ice cover effect, Boundary layer, Experimentation, Safety, Hoarfrost, Glaze.
- 40-3498**  
Arctic offshore zones geographical framework. Montarges, R., *Oil and enterprise*, Dec. 1985, No.29, p.4-8.  
Sea ice distribution, Ice conditions, Climatic factors, Fast ice, Pack ice, Geography, Ocean bottom, Subsea permafrost, Ice scoring, Bottom sediment, Arctic Ocean.
- 40-3499**  
Arctic petroleum geology. Stevaux, J.R., *Oil and enterprise*, Dec. 1985, No.29, p.13.  
Petroleum industry, Landscape types, Ocean bottom, Geology, Crude oil, Sedimentation, Tectonics, Stratigraphy, Canada, Beaufort Sea.
- 40-3500**  
Brief history of the search for Arctic offshore oil. Xuong, N.D., *Oil and enterprise*, Dec. 1985, No.29, p.14-19.  
Hydrocarbons, Oil recovery, History, Polar regions, Offshore drilling, Distribution, Arctic Ocean, Canada.
- 40-3501**  
Effects of ice on structures. Putot, C., *Oil and enterprise*, Dec. 1985, No.29, p.19-24, 2 refs.  
Ice loads, Ice deformation, Offshore structures, Sea ice distribution, Ice mechanics, Ice crystal structure, Ice creep, Ice cracks, Ice pressure, Ice cover effect, Stresses.
- 40-3502**  
Geotechnical problems in Arctic Seas. Le Tirant, P., *Oil and enterprise*, Dec. 1985, No.29, p.25-30, 7 refs.  
Artificial islands, Ice loads, Subsea permafrost, Ocean bottom, Stability, Exploration, Ice pressure, Caissons, Engineering, Permafrost preservation, Ice scoring, Pipelines, Beaufort Sea.
- 40-3503**  
Exploration and production structures for Arctic Seas. Putot, C., *Oil and enterprise*, Dec. 1985, No.29, p.30-40.  
Offshore structures, Ice conditions, Sea ice distribution, Ice loads, Design, Construction materials, Crude oil, Exploration, Petroleum industry, Caissons, Platforms, Arctic Ocean.
- 40-3504**  
Ice-breakers for the Canadian Arctic. Huth, M., et al., *Oil and enterprise*, Dec. 1985, No.29, p.40-45, 9 refs.  
Beghin, D., Pelissier, M.  
Icebreakers, Ice navigation, Ice conditions, Ice breaking, Sea ice, Design.
- 40-3505**  
Proceedings of the Seventh Symposium on Polar Meteorology and Glaciology. Kawaguchi, S., ed., Tokyo. National Institute of Polar Research. *Memoirs*, Dec. 1985, Special issue No.39, 252p., For selected papers see 40-3506 through 40-3521 or E-33834, E-33835, F-33824 through F-33833, F-33836, F-33837, I-33821 through I-33823 and J-33838.  
Meetings, Glaciology, Meteorology, Oceanography.  
61 papers were presented at the symposium. The main topics were: aerosols and atmospheric constituents, clouds and snowfall, snow crystals, radiation, ice cores, snow cover, ice sheet, climatic change, sea ice and oceanography. The present volume contains 28 full-length papers and 13 abstracts; full-length papers are arranged in order of scientific areas of meteorology, glaciology and oceanography. (Auth.)
- 40-3506**  
Surface micromorphology of columnar ice crystals growing in air at high and low supersaturations. Gonda, T., et al., Tokyo. National Institute of Polar Research. *Memoirs*, Dec. 1985, Special issue No.39, p.108-116, 11 refs.  
Sei, T., Gomi, H.  
Ice crystal growth, Supersaturation, Ice crystal structure, Microstructure, Antarctica—Mizuho Station.  
The growth mechanisms of long prisms with skeletal structures precipitating in the polar regions are studied by observing the surface micromorphology of columnar ice crystals growing in air at high and low supersaturations. It is concluded that long hollow prisms, that is, long prisms with large skeletal structures grow by a two-dimensional nucleation mechanism under supersaturation above about 10%, while long prisms with small skeletal structures grow by a screw dislocation mechanism under supersaturation below about 2%. (Auth.)
- 40-3507**  
Annual precipitation estimated by blowing snow observations at Mizuho Station, East Antarctica, 1980. Kobayashi, S., Tokyo. National Institute of Polar Research. *Memoirs*, Dec. 1985, Special issue No.39, p.117-122, 8 refs.  
Snowfall, Snowdrifts, Snow water equivalent, Snow density, Antarctica—Mizuho Station.  
This paper describes annual precipitation estimated by blowing snow observations made on a strong katabatic wind slope at Mizuho Station. Snowfall densities have been estimated from the asymptotes of the vertical profiles of snow drift density, a method which separates the amount of snowfall from the drift density in a snowstorm. Using the snowfall densities, fall velocity of blowing snow particles (0.5 m/s) and the distribution of number of days with snowfall, the value of annual precipitation in 1980 was estimated as about 140 mm in water. (Auth.)
- 40-3508**  
Estimation of precipitation from drifting snow observations at Mizuho Station in 1982. Takahashi, S., Tokyo. National Institute of Polar Research. *Memoirs*, Dec. 1985, Special issue No.39, p.123-131, 11 refs.  
Snowfall, Snow density, Snowdrifts, Snow water equivalent, Antarctica—Mizuho Station.  
Precipitation at Mizuho Station in 1982 was estimated in two ways. From the drift flux at a 1 m height, the daily precipitation was estimated by assuming that an increase of the drift flux compared with an empirical formula is all due to precipitation. Precipitation was also estimated from the drift density at a 30 m height, where the drift density is assumed all due to precipitation. The estimated precipitation by both ways was small in summer, large in winter, and especially large in June. The annual precipitation in 1982 was estimated at 230 mm from the drift flux at the 1 m height, and 260 mm from the drift density at the 30 m height. Taking accuracy into account, these are in the range between 100 and 300 mm. The estimated amount is considerably larger than the net accumulation of 70 mm obtained by earlier measurements. (Auth.)
- 40-3509**  
Variability of surface mass balance in the Mizuho Plateau, Antarctica. Satow, K., Tokyo. National Institute of Polar Research. *Memoirs*, Dec. 1985, Special issue No.39, p.132-140, 20 refs.  
Snow cover, Mass balance, Periodic variations, Antarctica—Mizuho Plateau.  
On the basis of the data of surface mass balance along the traverse routes in 1968-1983, mean and variation of the annual balance were obtained in the Mizuho Plateau. A year-to-year variation of the surface mass balance showed a general increase during the period of the measurement. The climatic effect and the effect of surface microrelief, such as sastrugi and dunes, on the mass balance variability were assessed. The former prevailed in a high accumulation zone of the coastal region, and the latter became larger inland. (Auth.)
- 40-3510**  
Density profile of a 413.5 m deep fresh core recovered at Mizuho Station, East Antarctica. Nakawo, M., et al., Tokyo. National Institute of Polar Research. *Memoirs*, Dec. 1985, Special issue No.39, p.141-156, 18 refs.  
Narita, H.  
Ice sheets, Ice cores, Ice density, Cracking (fracturing), Antarctica—Mizuho Station.  
Within a month after core recovery, density data were obtained from the dimensions and the weights of the core samples and by the hydrostatic method. The density data were corrected for the surface effect with considerations of the bubble concentration and the average bubble size. A method has been presented to estimate the *in situ* density value (without cracks) from the nominal density data with cracked samples based upon the data on total gas content. This method has been applied to the data of deep portion (below 135 m depth), where the core was cracked considerably. A reasonable depth profile of *in situ* density was thus estimated, which indicated that the shrinkage of trapped air bubbles was the main densification process of ice after the bubble close-off. (Auth.)
- 40-3511**  
Structure of 413.5-m deep ice core obtained at Mizuho Station, Antarctica. Narita, H., et al., Tokyo. National Institute of Polar Research. *Memoirs*, Dec. 1985, Special issue No.39, p.157-164, 6 refs.  
Nakawo, M.  
Ice cores, Ice structure, Gas inclusions, Bubbles, Antarctica—Mizuho Station.  
Ice cores down to a depth of 413.5 m were obtained at Mizuho Station (70 deg 41' 9"S, 44 deg 19' 9"E), East Antarctica, in April to July, 1983. Grain features (size, periphery length and shape factor) and air bubble morphology were examined from thin section photographs taken within a month after the recovery of the ice cores. They showed discernible differences from those of the similar examinations previously done of ice cores of the same place recovered in 1972. The differences are attributed to the fact that the latter examinations were based on photographs taken much later after the recovery. Fabric patterns were also examined at selected depths also within one month after the recovery.
- 40-3512**  
Measurement of velocities of P and S waves in boreholes at Mizuho Station and Minami-Yamato Nunataks, East Antarctica. Ishizawa, K., et al., Tokyo. National Institute of Polar Research. *Memoirs*, Dec. 1985, Special issue No.39, p.165-172, 6 refs.  
Mac, S.  
Ice sheets, Boreholes, Seismic velocity, Wave propagation, Antarctica—Mizuho Station.  
At Mizuho Station velocity profiles of P and S waves to a depth of 208 m were measured on 30 July and 1 August 1983. The waves were generated by hitting an iron block set on the snow surface and traveled waves were detected by geophones set in boreholes. It was revealed that the velocities of P and S waves continuously increased with depth. At Minami-Yamato Nunataks, velocities of both waves were obtained to a depth of 100 m in a bare ice region on 29 Dec. 1983. The obtained velocities were constant from the surface to a depth of 100 m, being 3.83 km/s for P wave and 2.01 km/s for S wave. P and S wave velocities at a depth of 100 m at both sites were compared. The differences in the S wave velocity are discussed on the basis of differences in crystal orientation. (Auth.)
- 40-3513**  
Flow pattern near Massif A in the Yamato bare ice field estimated from the structures and the mechanical properties of a shallow ice core. Azuma, N., et al., Tokyo. National Institute of Polar Research. *Memoirs*, Dec. 1985, Special issue No.39, p.173-183, 10 refs.  
Nakawo, M., Higashi, A., Nishio, F.  
Ice structure, Ice cores, Ice sheets, Ice mechanics, Ice creep, Antarctica—Queen Maud Land.  
A shallow ice core, 30 m long, was collected at the Yamato bare ice field in East Queen Maud Land. From the uniaxial compression tests with the core, the flow law of the ice was obtained, which was different considerably from that obtained for the artificial polycrystalline ice with random orientation fabric. Additional structural analyses of the core allowed estimation of

the stress configuration and the flow field around the nunataks. As a result, a longitudinal stress of 0.15 MPa was obtained at the drilling site. Also, the variation of surface velocities, internal flow lines and isochrones upstream of Massif A were calculated. The results showed that the origin of the ice emerging near the nunataks is not far from its present position and the catchment area is rather small. The ice is considered nearly stagnant in the region adjacent to the nunataks. (Auth.)

40-3514

**New explanation of bending of a snow density profile.** Ebinuma, T., et al. Tokyo. *National Institute of Polar Research. Memoirs*, Dec. 1985, Special issue No.39, p.184-188, 10 refs.

Nishimura, H., Maeno, N.

**Snow density, Snow deformation.**

The physical meaning of bending of a snow density profile at G2 in Antarctica (665 kg/cu m, 32 m depth below the snow surface) was investigated. It was found that the bending occurred at pressures around 0.1-0.2 MPa. Examination of snow densification mechanisms as a pressure-sintering phenomenon suggested that the bending is related to the initiation of dominance of the dislocation creep mechanism. (Auth.)

40-3515

**On the contraction of borehole at Mizuho Station, East Antarctica.**

Hasemi, T., et al. Tokyo. *National Institute of Polar Research. Memoirs*, Dec. 1985, Special issue No.39, p.189-192, 4 refs.

Takahashi, A., Ikegami, K., Tanaka, Y.

**Ice drills, Boreholes, Ice mechanics, Ice creep.**

Changes of borehole diameters at different depths down to 400 m were estimated. Results are as follows: Tertiary creep will start after about half a year and the diameter of the hole will be 2/3 of the initial in a year and 1/10 after 2 years at a depth of 400m, provided that the shifting from the secondary to the tertiary occurs at total strain. The rate is 3 to 4 times larger when a different flow law derived from the flow observations at Mizuho Plateau is used. Borehole closure rate varies widely depending on the flow law of ice. In order to determine a representative flow law of ice in Mizuho Plateau, the importance of borehole observation and technical development of boring is emphasized. (Auth. mod.)

40-3516

**Volcanic ash in dirt layers from the Allan Hills bare ice area in Victoria Land, Antarctica.**

Katsushima, T., et al. Tokyo. *National Institute of Polar Research. Memoirs*, Dec. 1985, Special issue No.39, p.193-208, 26 refs.

Nishio, F.

**Ice sheets, Volcanic ash, Rocks, Antarctica—Allan Hills.**

Dirt layers were found in the Allan Hills bare ice area in Victoria Land, Antarctica. They contain volcanic ash consisting of abundant glass shards with subordinate crystal fragments of plagioclase, titanite, olivine, kaersutite, titanomagnetite, etc. Tephra samples collected from each of 8 dirt layers are classified into three groups based on petrography, morphology and major element chemistry, suggesting that these tephra may have been derived from at least two different volcanoes. Possible volcanic sources within Victoria Land are discussed on the basis of composition and grain size of the tephra. (Auth. mod.)

40-3517

**Report of natural remanent magnetization of dirt ice layers collected from Allan Hills, southern Victoria Land, Antarctica.**

Funaki, M., et al. Tokyo. *National Institute of Polar Research. Memoirs*, Dec. 1985, Special issue No.39, p.209-213, 10 refs.

Nagata, T.

**Remanent magnetism, Ice cover, Impurities, Antarctica—Allan Hills.**

Paleomagnetic studies are performed for the dirt ice specimens collected from the Allan Hills. These specimens have fairly stable NRM against AF demagnetization up to 500 Oe. Every specimen has normal magnetization with 0.000025 emu/g intensity, -69 deg inclination and 164 deg declination. The NRM carriers are estimated to be almost pure magnetite with a pseudomorph domain structure. Although the NRM acquisition mechanism cannot be explained at this time, it may be important to evaluate the possibility of NRM acquisition when the snow containing volcanic ash changes to ice under pressure. Since the nondipole components of the geomagnetic field are large in the southern polar cap area, the NRM cannot estimate the age and the place of NRM acquisition from the VGP position of these specimens. (Auth.)

40-3518

**Ice core drills usable for wet ice.**

Suzuki, Y., et al. Tokyo. *National Institute of Polar Research. Memoirs*, Dec. 1985, Special issue No.39, p.214-218, 10 refs.

Shimbori, K.

**Ice drills, Ice composition, Wet ice.**

40-3519

**Tandem diameter gauge for use in antarctic ice hole.** Naruse, R., et al. Tokyo. *National Institute of Polar Research. Memoirs*, Dec. 1985, Special issue No.39, p.219-222, 5 refs.

Shimbori, K., Akitaya, E., Suzuki, Y.

**Ice drills, Boreholes, Measuring instruments, Antarctica—Mizuho Station.**

A diameter gauge, which has two diameter calipers 0.53 m apart, was developed for the Japanese Antarctic Research Expedition. Each caliper has three contact wheels which are spring-loaded through the supporting rods. The use of two calipers makes a better alignment between the axes of the hole and the gauge. Diameters in the range from 90 to 190 mm can be measured with an accuracy of 1.5 mm. (Auth.)

40-3520

**Rise of snow temperatures caused by the sewage disposal, Mizuho Station, Antarctica.**

Nakawo, M., Tokyo. *National Institute of Polar Research. Memoirs*, Dec. 1985, Special issue No.39, p.223-232, 15 refs.

**Snow temperature, Sewage disposal, Temperature variations, Antarctica—Mizuho Station.**

Measurements of snow temperature distribution indicated that the temperature was considerably higher in the vicinity of the station than in the natural snow layers far from it. It was considered that the temperature rise was caused by the human activities at the station, in particular by the sewage discharge into the surface snow layer. A simple calculation of the temperature rise was compatible with the field data on the temperature distribution around the station. Vertical profiles of the snow temperature, obtained through shallow/medium depth boreholes, are discussed in terms of the artificial temperature rise. (Auth.)

40-3521

**Convective mixing and sea ice formation in the Weddell-Endeavour basin in 1974 and 1975.**

Motoi, T., et al. Tokyo. *National Institute of Polar Research. Memoirs*, Dec. 1985, Special issue No.39, p.233-243, 15p.

Ono, N., Wakatsuchi, M.

**Sea ice, Sea water, Water temperature, Water chemistry, Salinity, Antarctica—Weddell Sea.**

The formation of sea ice in the Weddell-Endeavour basin is examined using a one-dimensional convective mixing model. Oceanographic data obtained in late summer of 1974 and 1975 aboard the icebreaker *Fuji* are used as the initial conditions in the model. The results by the present model indicate that no sea ice forms in the Weddell Polynya region in 1974 and 1975. The major oceanographic criterion for sea ice formation in the winter is salinity of water in a mixed layer in the preceding summer; high salinity gives no sea-ice formation, which is due to an upward heat flux from deep water by deep convection. (Auth.)

40-3522

**Hydrology and glaciology: dry valleys, Antarctica, annual report for 1981-82.**

Chinn, T.J.H., et al. New Zealand. *Ministry of Works and Development. Report*, July 1984, WS 1017, 63p.

Woods, A.D.H.

**Glacial hydrology, Meltwater, Weather observations, Antarctica—Victoria Land.**

This program investigates long and short term climatic fluctuations in the dry valleys region by the study of glaciers, summer meltwater streams, and the levels of enclosed lakes. Flow records of the Onyx River were made at two sites, and the total measured seasonal discharge into Lake Vanda was 3.8 million cu m. Lake Vanda rose approximately 500 mm over the summer while the levels of the other 8 lakes measured had level changes from -41 mm (Upper Victoria) to +253 mm (L Fryxell). Glacier mass balance measurements (Heimdall Glacier) and ablation measurements on various glaciers continue to show small gains and losses consistent with past years. Maximum ablation losses in mm water equivalent were: Heimdall Glacier -100; Wilson Piedmont Glacier -35; Wright Lower Glacier -155; Clark Glacier -236; Wright Upper Glacier -238. Apart from a number of periods of cloudy weather with minor snowfalls during late December and January, there were no notable meteorological events over this summer. On Heimdall Glacier, two holes were drilled to near 15 m using a motorized "SIPRE" ice drill and a rig. A temperature probe was lowered into the holes to obtain temperature profiles from which mean annual air temperatures were estimated for altitudes of 1350 m and 1450 m. (Auth.)

40-3523

**Interactions among turbulence, radiation, and microphysics in Arctic stratus clouds.**

Curry, J.A., *Journal of the atmospheric sciences*, Jan. 1, 1986, 43(1), p.90-106, 32 refs.

**Cloud physics, Boundary layer, Thermal radiation, Turbulence, Beaufort Sea.**

40-3524

**Mesoscale frequencies and seasonal snowfalls for different types of Lake Michigan snow storms.**

Kelly, R.D., *Journal of climate and applied meteorology*, Mar. 1986, 25(3), p.308-312, 7 refs.

**Snowfall, Snowstorms, Lake effects.**

40-3525

**Lake Erie-Niagara River ice boom.**

Churchill, R.R., *Geographical review*, Apr. 1985, 75(2), p.111-124, Numerous refs.

**Ice booms, Lake ice, River ice, Electric power, Environmental impact.**

40-3526

**Repeated load triaxial testing of frozen and thawed soils.**

Cole, D.M., et al. *Geotechnical testing journal*, Dec. 1985, 8(4), MP 2068, p.166-170, 4 refs.

Durell, G., Chamberlain, E.J.

**Frozen ground strength, Ground thawing, Stress, Loads (forces), Thaw weakening, Soil strength, Freeze thaw cycles, Strain tests, Deformation, Soil water, Equipment.**

This paper describes the equipment and methodology used to determine the resilient properties of granular soils that exhibit thaw-weakening behavior. Such soils suffer a significant loss in stiffness as the result of freezing and thawing and subsequently experience an increase in stiffness during a recovery phase. The recovery phase results from gradual desaturation of the thawed soil and is characterized by an increase in the soil moisture tension level. We have developed a means to simulate this freeze-thaw-recovery process in the laboratory that calls for testing specimens several times at soil moisture tension levels corresponding to field observations.

40-3527

**Vertically stable benchmarks: a synthesis of existing information.**

Gatto, L.W., MP 2069, U.S. Army Corps of Engineers Surveying Conference, Jacksonville, FL, Feb. 4-8, 1985. *Proceedings*, 1985, p.179-188, Refs. p.183-185.

**Frost action, Measuring instruments, Permafrost, Bench marks, Topographic surveys, Hydrology, Structures, Deformation, Design.**

Techniques used for topographic, hydrographic and structural movement surveys are no more accurate than the benchmarks used as reference. In northern areas, frost action can cause substantial vertical movement of benchmarks. Benchmarks can also subside or shift in wetland and coastal areas. Various benchmark designs and installation procedures reduce or eliminate movement, but information on the designs and procedures is widely scattered and not available to Corps of Engineers Districts in one report. This paper gives the preliminary results of a synthesis of existing information compiled from surveys of Corps of Engineers Districts and Divisions, U.S. and Canadian government agencies and private industry and from a literature review. A matrix for selecting benchmarks appropriate for various climatic and soil conditions will be prepared from the synthesized information. This matrix and a description of the procedures required for installing various types of benchmarks will be available in September 1985.

40-3528

**Cold weather O&M.**

Reed, S.C., et al. *Operations forum*, 1985, 2(2), MP 2070, p.10-15, 6 refs.

Niedringhaus, L.

**Waste treatment, Water treatment, Cold weather operation, Temperature effects, Viscosity, Lubricants.**

40-3529

**Computational mechanics in arctic engineering.**

Sodhi, D.S., MP 2072, Computer Methods in Offshore Engineering Specialty Conference, Halifax, Nova Scotia, May 23, 1984. *Proceedings*, [1984], p.351-374, Refs. p.367-374.

**Ice mechanics, Ice solid interface, Offshore structures, Engineering, Ice loads, Impact strength, Cold weather construction, Computer applications, Mathematical models, Drift, Flooding ice.**

A review of numerical modeling in arctic engineering is presented, and emphasis is given to the work which deals with computational mechanics. For large-scale problems the dynamic model for sea ice and icebergs drift is discussed. For medium-scale problems the bearing capacity of floating ice sheets and ice-structure interaction for bending, buckling and crushing failures of ice sheets are discussed. A brief discussion is also presented on the impact ice forces and the kinematic model for ridge formation.

40-3530

**Tank E/O sensor system performance in winter: an overview.**

Lacombe, J., et al. MP 2073, Hanover, NH, U.S. Army Cold Regions Research and Engineering Laboratory, [1985], 26p., Presented at the Smoke/Obscurants Symposium, 9th, Adelphi, MD, April 23-25, 1985. 8 refs.

Redfield, R.K.

**Military operation, Tanks (combat vehicles), Cold weather operation, Meteorological factors, Lasers, Instruments, Winter, Visibility, Optical properties, Electrical properties, Snowfall.**

This paper describes the SNOW-III-WEST experiment and a related study conducted in the Federal Republic of Germany that was designed to increase the understanding of the effects of winter weather on the performance of electro-optical sensor systems in main battle tanks. SNOW-III-WEST was conducted at Camp Grayling, Michigan, during December 1984 and January 1985. Its objectives were to document the performance of the M1 tank EO sensor suite in winter and gather data from threat vehicle EO sensors and M1 tank developmental sensors for use in developing system capability comparisons. To accomplish this, an M1 tank gunners primary sight (GPS) was positioned to view and range to vehicular targets at dis-

stances out to 1600 m. The GPS contains a day sight, night sight and laser rangefinder. Other U.S. and threat EO systems were co-located with the GPS. Day and night sight imagery through the device optics was recorded using video equipment while simultaneous target observations by the sight operator were documented. Detailed measurements were made to characterize important target scene and environmental factors. These included: meteorological, airborne-snow, scene illumination, and atmospheric transmission measurements, as well as inherent and apparent visible and infrared target/background signature measurements. PM Smoke's personnel response and evaluation system for target obscuration (PRESTO) was used to document the sight operator's target detection responses.

#### 40-3531 Effects of snow on vehicle-generated seismic signatures.

Albert, D.G., MP 2074, Sensor Technology Symposium, 4th, Apr. 26-28, 1983. Report. Vol.1: Unclassified papers, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS, Environmental Laboratory, July 1984, p.83-109, 9 refs.

#### Snow cover effect, Military operation, Seismic surveys, Attenuation, Acoustics, Seasonal variations, Vehicles.

Vehicle-generated seismograms recorded under summer and winter conditions at Fort Devens, Massachusetts, are analyzed and compared. The data were recorded using three-component geophones located just beneath the ground surface and microphones mounted on tripods 0.3 m tall. Winter data were recorded with a 0.7-m-thick snow cover present at the test site. The 14-track FM field tapes were digitized in the laboratory at a sampling rate of 500 Hz in preparation for filtering and spectral analysis. The filtering effect of the snow cover on the seismic data is striking. Because the acoustic-to-seismic coupled energy is attenuated by the snow, the appearance and frequency content of the recorded ground motion is changed dramatically. Automatic vehicle classification algorithms will have to account for these effects if they are to operate successfully in the presence of snow.

#### 40-3532 Frozen precipitation and concurrently observed meteorological conditions.

Bilelo, M.A., MP 2075, [1985], 11p., Presented at the 42nd Meeting of the Eastern Snow Conference, Montreal, Canada, June 1985. 8 refs.

#### Snowfall, Precipitation (meteorology), Meteorological data, Statistical analysis, Freezing, Air temperature, Humidity, Wind velocity, Fog, Visibility, Diurnal variations.

This study evaluates statistical data for two or more meteorological parameters, recorded concurrently during the winter. The analysis considers only freezing forms of precipitation, placed into seven categories, and correlated with simultaneously observed atmospheric conditions, such as temperature, humidity and wind speed. Computer tabulated data from 11 years of winter weather for München/Riem, West Germany, were obtained for the investigation. Typical results are: 1) the variations in absolute humidity values that can be expected during periods of fog or ground fog at different air temperatures, 2) the likelihood that freezing rain or freezing drizzle will occur least frequently between 1200 and 1700 hours, and 3) the diurnal and monthly air temperatures, relative humidity and examples of the unusual and interesting environmental knowledge that can be gained from available climatic records; similar investigations can be conducted for other sites that have long-term weather records in computer-based files.

#### 40-3533 Evaluation of seasonal variation in resilient modulus of granular soil affecting pavement performance.

Johnson, T.C., MP 2076, [1985], c21p., Presented at the 33rd Annual Conference on Soil Mechanics and Foundation Engineering, St. Paul, MN, Jan. 1985. 27 refs.

#### Pavements, Freeze thaw cycles, Frozen ground mechanics, Road maintenance, Seasonal variations, Loads (forces), Damage, Forecasting, Tests, Moisture transfer, Soil structure.

#### 40-3534 Scientific report of Second Indian Antarctic Expedition to Antarctica.

India. Department of Ocean Development, New Delhi, 1985, 132p., Tech. pub. No.2, For individual papers see 40-3535 through 40-3543 or E-33841 through E-33845, F-33852 through F-33858, G-33861, I-33859, I-33862, J-33846, K-33848 through K-33850, K-33860, L-33847 and L-33851.

#### Expeditions, Glaciology, Antarctica—Princess Astrid Coast.

The 2nd Indian Antarctic Expedition operated in Princess Astrid Coast during the antarctic summer of 1982-83. Its primary goals were to select a site for a permanent station; carry out scientific research projects; establish a communications link between India and Antarctica; prepare and maintain an airstrip; and reconnoitre the area within a 100 km radius of the base site. Seven government scientific agencies were involved in the research program undertaken by 28 scientists supported by contingents of the Indian Army, Navy, and Air Force and by an electronics agency. The 22 papers sub-divide into geology, 5; geophysics and geomagnetism, 6; glaciology, 7; and meteorology and radio physics, 4.

#### 40-3535 Acoustic studies at and around Dakshin Gangotri, Antarctica.

Sastry, H.R.S., Scientific report of the Second Indian Antarctic Expedition, Technical publication no.2, New Delhi, India, Department of Ocean Development, 1985, p.39-46.

#### Ice acoustics, Ice shelves, Seismic surveys, Hydrography.

A program of studies in the fields of acoustics, seismology, physical oceanography and hydro-acoustics was successfully carried out. The details of the experiments and the results are presented. Seismic studies indicated the existence of a sedimentary layer below the ice shelf with characteristics similar to those of strata off the Indian Coast. Acoustic studies of ice cracks led to the determination of characteristic frequencies of these sounds. Ocean thermal structure was recorded to 450 m by using XBT in the Southern Indian Ocean. Existence of sound channels in shallow depths of 10-100 meters was established in the ocean near Antarctica. Sonar ranges in these sound channels were calculated. The advantage of cylindrical propagation in the sound channel is offset to some extent by the higher attenuation coefficient values at low temperature and high salinity. Noise spectra of the sounds from birds, penguin and skua, are presented. Recommendations are made for the benefit of future expeditions to Antarctica. (Auth.)

#### 40-3536 Ice shelf studies at and around Indian scientific research station, Dakshin Gangotri, Antarctica.

Raina, V.K., et al, Scientific report of the Second Indian Antarctic Expedition, Technical publication no.2, New Delhi, India, Department of Ocean Development, 1985, p.75-80, 2 refs.

#### Kaul, M.K., Chakraborty, S.K. Ice shelves, Fast ice, Coastal topographic features, Antarctica—Schirmacher Hills.

A survey of a part of the permanent ice shelf which surrounds the continent of Antarctica, was carried out between 15 E to 15 W longitude at and around 70 S latitude to select a site for a permanent Indian station. The survey has revealed that this part of the shelf has undergone no major topographical change during the last forty years or so except for the breaking of a large protruded portion along zero degree meridian. Stability of the shelf is due to its being in contact with the submarine continental shelf which has, at places, been subjected to ice rises. (Auth.)

#### 40-3537 Abi on the antarctic shelf ice.

Kaul, M.K., et al, Scientific report of the Second Indian Antarctic Expedition, Technical publication no.2, New Delhi, India, Department of Ocean Development, 1985, p.81-86.

#### Chakraborty, S.K., Raina, V.K. Ice shelves, Ablation, Solar radiation, Markers, Wind (meteorology).

The antarctic climate is directly related to the melting of its ice. Monitoring of the melt pattern was carried on the shelf ice near the Indian base research station. Wind was found to be the most important agent influencing ablation of antarctic ice, whereas solar radiation played a subordinate role. (Auth.)

#### 40-3538 Iceberg studies in antarctic waters.

Kaul, M.K., et al, Scientific report of the Second Indian Antarctic Expedition, Technical publication no.2, New Delhi, India, Department of Ocean Development, 1985, p.87-90.

#### Chakraborty, S.K., Raina, V.K. Icebergs, Ice cores, Ice physics.

Icebergs are one of the most important physical forms of ice around the Antarctic continent. During the 2nd Indian expedition the appearance of solid icebergs was noticed at 59 S latitude. Onwards from this spot continuous occurrence of icebergs was logged, and several distinctive physical forms of bergs were identified. For detailed examination of the iceberg the authors landed on an iceberg on Jan. 10, 1983, which was adrift at a location fixed as 59 deg 53 min 12 sec S latitude and 11 deg 46 min 18 sec E longitude. A shallow borehole was drilled by a portable power driven machine and a complete core was obtained up to a depth of 4.62 m. Physical appearance, location and nature of stratification indicate that this iceberg has been generated by calving of the main shelf of the Princess Astrid Coast. (Auth.)

#### 40-3539 Note on the snout of Dakshin Gangotri Glacier, Antarctica.

Kaul, M.K., et al, Scientific report of the Second Indian Antarctic Expedition, Technical publication no.2, New Delhi, India, Department of Ocean Development, 1985, p.91-93.

#### Chakraborty, S.K., Raina, V.K. Glaciers, Antarctica—Schirmacher Hills.

The nearest exposed landmass to the Indian research station is the Schirmacher Range (Dakshin Gangotri). A characteristic feature of the southern topography of this range is a number of glacier outlets overlying the rock surface. The nature and morphology of these glaciers differ conspicuously from the shelf ice north of this range. One of these glaciers was selected, as part of glaciological studies in this area and detailed mapping of the snout position was carried out. (Auth.)

#### 40-3540 Experiment on artificial augmentation of ablation on the shelf ice, Antarctica.

Kaul, M.K., et al, Scientific report of the Second Indian Antarctic Expedition, Technical publication no.2, New Delhi, India, Department of Ocean Development, 1985, p.95-97.

#### Chakraborty, S.K., Raina, V.K. Ice shelves, Ablation, Ice melting, Dusting, Antarctica—Princess Astrid Coast.

The melting rate of snow/ice can be changed substantially by altering the albedo of its surface. Such an experiment was carried out on the antarctic shelf ice during the present expedition using coal dust as the medium resulting in enhanced melting of the ice.

#### 40-3541 Stratigraphic studies of antarctic ice.

Kaul, M.K., et al, Scientific report of the Second Indian Antarctic Expedition, Technical publication no.2, New Delhi, India, Department of Ocean Development, 1985, p.99-102.

#### Chakraborty, S.K., Raina, V.K. Ice shelves, Ice cores, Stratigraphy, Fallout, Antarctica—Princess Astrid Coast.

For the stratigraphic studies of antarctic ice, which has an accumulation record of thousands of years, various methods were attempted: direct measurement through a network of stakes, differentiation of accumulated layers through difference in stratigraphic character, establishment of reference horizon through radioactive fallout, and the O18/O16 and D/H values of the deposited snow and ice. On the basis of stratigraphic and physical characteristics an ice core study revealed two categories: ice or depth hoar which shows compaction, larger crystal grains, greater hardness and dull grey to green color; and firm, which is less compact with smaller grain size and white to off white color. In addition to these major stratigraphic layers, a 1.5 cm thick sandy layer about 36 cm below the ice surface was also recorded in one bore-hole. (Auth.)

#### 40-3542 Isotopic and TL studies of antarctic ice samples.

Nijampurkar, V.N., et al, Scientific report of the Second Indian Antarctic Expedition, Technical publication no.2, New Delhi, India, Department of Ocean Development, 1985, p.103-106, 7 refs.

#### Fallout, Radioactive isotopes, Ice shelves, Laminence, Antarctica—Princess Astrid Coast.

Shallow ice core samples near Dakshin Gangotri station from the transition zone between the inland polar ice and shelf ice were studied for Pb210, Ca137, deltaO18 and thermoluminescence of trapped dust in ice layers. The total beta-activity shows a small peak around 1.5 m but Ca137 activity is below the detection limit in all the samples. The Pb210 activity indicates an average fallout of about 1.1 dpm/L in various samples. The vertical profile of deltaO18 in 3 m ice core indicates a mean annual surface air temperature of -9 C at the time of deposition. Natural thermoluminescence levels of the trapped dust are smaller than the geological levels consistent with data obtained earlier. (Auth.)

#### 40-3543 Meteorological studies at Antarctica.

Sreedharan, C.R., et al, Scientific report of the Second Indian Antarctic Expedition, Technical publication no.2, New Delhi, India, Department of Ocean Development, 1985, p.107-118.

#### Sharma, A.K. Weather observations, Meteorological data, Ultraviolet radiation, Ice temperature.

Meteorological data were collected over the sea between India and Antarctica and over Antarctica itself. In Antarctica a full-fledged surface observatory was set up with remote recording facilities for atmospheric temperature, wind speed and direction, humidity, global-reflected and ultraviolet radiation and temperature of ice at different depth levels. (Auth.)

#### 40-3544 Effect of snow on vehicle-generated seismic signatures.

Albert, D.G., U.S. Army Cold Regions Research and Engineering Laboratory, Aug. 1984, CR 84-23, 24p., ADB-090 976, 10 refs.

#### Military operation, Snow cover effect, Seismology, Detection, Vehicles, Attenuation, Acoustics, Seasonal variations.

Vehicle-generated seismograms recorded under summer and winter conditions at Fort Devens, Massachusetts, are analyzed and compared. The data were recorded using three-component geophones located just beneath the ground surface and microphones mounted on tripods 0.3 m tall. Winter data were recorded when a 0.7-m-thick snow cover was present. The filtering effect of this snow cover on the seismic data was striking. The appearance and frequency content of the recorded ground motion changed dramatically from summer to winter because snow attenuates the acoustic-to-seismic coupled energy. These changes were verified by magnitude-squared coherence analysis and by a simple Wiener prediction model. Automatic vehicle classification algorithms will have to account for these effects if the algorithms are to operate successfully in the presence of snow.

## 40-3545

**Shoreline erosion processes: Orrell Lake, Minnesota.**

Reid, J.R., U.S. Army Cold Regions Research and Engineering Laboratory, Dec. 1984, CR 84-32, 101p., ADA 152 952, Refs. p.54-56.

**Shore erosion, Slope processes, Lake water, Banks (waterways), Ground thawing, Sediment transport, Water waves, Reservoirs, Shoreline modification, Rain, Seasonal variations, Meteorological factors.**

Orrell Lake, in west-central Minnesota, is a flood-control, water-management reservoir first impounded in 1953. Subsequent erosion of the shoreline and a lack of knowledge of slope erosion processes in this region prompted this study to identify and quantify the processes there. The processes were measured at selected sites between June 1980 and June 1983. Erosion of the banks is primarily caused by three processes: rain, frost thaw, and waves. The first two processes tend to move sediment to the base of the steep slopes, forming a relatively gentle surface of accumulation. Wave action then tends to move this sediment into the lake. Analysis of the data collected over three years has confirmed that wave action is the dominant erosion process, providing almost 77% of the erosion during the 1981-82 study year. During the 1981 high pool level, 2,089 Mg of sediment, mostly colluvium, was removed from the lower slopes by wave action striking the 1.62 km of eroding shoreline. More than 4,300 Mg was eroded by waves accompanying the higher pool levels of 1982.

## 40-3546

**Impact of dredging on water quality at Kewaunee Harbor, Wisconsin.**

Iskandar, I.K., et al, U.S. Army Cold Regions Research and Engineering Laboratory, Aug. 1984, CR 84-21, 16p., ADA-148 321, 16 refs.

Cragin, J.H., Parker, L.V., Jenkins, T.F.  
**Dredging, Sediments, Waste disposal, Water pollution, Lacustrine deposits, Water chemistry, Ports, United States—Wisconsin—Kewaunee.**

Six sediments and four water samples were collected from Kewaunee, Wisconsin, in 1981, prior to dredging of this Lake Michigan harbor. A modified elutriate test was used to estimate potential impact on water quality upon harbor dredging and disposal of the sediments in a confined facility. The modification of the test included a comparison between containment release under aerated vs. unaerated conditions and filtered vs. unfiltered elutriates. Statistical analysis showed that the differences in the chemical characteristics between the filtered and unfiltered samples were significant for soluble reactive P and all the tested metals except Cu. Significant but low amounts of heavy metals (Cd, Pb, Zn, Ni, Fe, Mn) and soluble reactive P will be released to the water if the effluent is not filtered. Under aerated conditions, COD in both the filtered and unfiltered samples was higher than under unaerated conditions. In contrast, total organic carbon was much higher under the unaerated condition than under aerated conditions. The study concluded that sediment and contaminant releases from the confined disposal facility (CDF) to the harbor water were less than those from the Kewaunee River input. Also, retention of effluent in the CDF for about four days decreased the suspended solids in the effluent to about 40 to 50 mg/L, which is similar to the concentration in the lake water. The use of sand filters should not be for routine operation but rather for emergency cases when there is not enough time for effluent retention in this CDF.

## 40-3547

**CRREL investigations relevant to offshore petroleum production in ice-covered waters.**

Tucker, W.B., MP 2086, International Symposium on Remote Sensing of Environment. Second Thematic Conference "Remote Sensing for Exploration Geology," Fort Worth, Texas, Dec. 6-10, 1982, Proceedings, Vol. 1, (1983), p.207-215, Refs. p.213-215.

**Offshore structures, Ice loads, Sea ice distribution, Remote sensing, Drift, Ice conditions, Ice crystal structure, Design, Ice mechanics, Ice strength.**

The U.S. Army Cold Regions Research and Engineering Laboratory has studied the sea ice environment of the Beaufort Sea for many years. Offshore development is now proceeding beyond the barrier islands and many of these studies have relevance to the planned activities. Sea ice presents a formidable hazard to the design and construction of production platforms and sea floor pipelines. CRREL investigations have addressed a number of the problems associated with these activities and remote sensing has played a major role in some of these studies. Specific efforts at CRREL have addressed the measurement of ice motion, the distribution and morphology of pressure ridges and shore ice pile-ups, ice conditions and thickness, the determination of ice strength, ice crystal structure, and the modeling of ice dynamics and thermodynamics.

## 40-3548

**Potential use of SPOT HRV imagery for analysis of coastal sediment plumes.**

Band, L.E., et al, MP 1744, 1984 SPOT Symposium. Proceedings. SPOT simulation application handbook, American Society of Photogrammetry, 1984, p.199-204, 5 refs.

McKim, H.L., Merry, C.J.  
**Bottom sediment, Sediment transport, Remote sensing, Water pollution, Spectroscopy, Distribution, Plumes.**

Simulated SPOT (HVR) 20-m multispectral data were obtained on 7 July 1984 over the Hart-Miller Island diked spoil containment facility located in the upper Chesapeake Bay. Sediment plumes were clearly visible and indicated the sediment transport direction at the time the image was taken. The portion of the image along the bay side of the island had strong specular reflection. The image was preprocessed to remove the majority of the specular reflection. The Sobel operator was applied to the enhanced imulated SPOT image. A set of edge segments were generated that follow the boundaries of the major sediment plumes. The strength of the edges was quite variable, reflecting the varying diffusion of the plume border. The Sobel edge-enhanced image showed two sets of plumes. The edge intensity was generally stronger nearer the source. Profiles of pixel digital number were taken at two distances, normal to the long axes of two sediment source areas. The cross sections taken through the plumes were plotted.

## 40-3549

**Wildlife habitat mapping in Lac qui Parle, Minnesota.**

Merry, C.J., et al, MP 2085, 1984 SPOT Symposium. Proceedings. SPOT simulation application handbook, American Society of Photogrammetry, 1984, p.205-208.

Green, G., Anderson, S.  
**Vegetation, Remote sensing, Spectroscopy, Photointerpretation, Mapping, Classifications, Agriculture, United States—Minnesota—Lac qui Parle.**

SPOT High Resolution Visible (HRV) simulated data were obtained over Lac qui Parle, Minnesota, to determine their usefulness for mapping wildlife habitat categories associated with Corps projects. Ground truth data were available from photointerpreted wildlife habitat unit maps and the agricultural crop inventory prepared for the summer of 1983. A geometric correction could not be applied to the data set, so only the spectral reflectance quality of the data was assessed. The sample size of 512 x 512 pixels was selected for the analyses. An unsupervised classification land cover map was generated with the Earth Resources Laboratory Application Software package. The classification was successful in discriminating wheat and alfalfa and other uniformly colored areas, but pasture and corn could not be separated. Also, we were not successful in separation of grasslands and legumes. Our results indicated that the 20-m HRV data can be used to photointerpret wildlife habitat using the false color image, but a digital classification cannot be performed. To obtain a habitat map using the HRV data would require a multitemporal analysis.

## 40-3550

**Spatial analysis in recreation resource management for the Berlin Lake Reservoir Project.**

Edwardo, H.A., et al, MP 2084, 1984 SPOT Symposium. Proceedings. SPOT simulation applications handbook, American Society of Photogrammetry, 1984, p.209-219.

Merry, C.J., McKim, H.L.  
**Landforms, Reservoirs, Remote sensing, Topographic features, Classifications, Environment simulation, Water chemistry, Lake water, Geography.**

The simulated SPOT data acquired from aircraft over the study site had several radiometric characteristics which would not be encountered in the nadir-looking satellite observations. These differential scene brightness features were removed from the data. The corrected data were used in two studies to assess their information content for water quality assessment and land cover classification. Both studies indicate that the SPOT data are comparable to high altitude color-infrared aerial photography in digital form. The implication for land cover mapping is that techniques developed for LANDSAT MSS will need to be modified to allow for interactive user input and the use of textual and contextual features in automatic digital classification. The results of the water quality analysis point to the potential of the SPOT data for assessing the presence of materials in the light-interactive zone of the water column.

## 40-3551

**Ohio River main stem study: the role of geographic information systems and remote sensing in flood damage assessments.**

Edwardo, H.A., et al, MP 2083, International Symposium on Remote Sensing of Environment, 18th, Paris, France, Oct. 1-5, 1984. Proceedings, Vol. 1, (1984), p.265-281, 3 refs.

Merry, C.J., McKim, H.L.  
**Remote sensing, River flow, Topographic features, Floods, Damage, Landforms, Geography, Classifications, Mapping, United States—Ohio River.**

The Pittsburgh District, Corps of Engineers, has conducted feasibility analyses of various procedures for performing flood damage assessments along the main stem of the Ohio River. Procedures using traditional, although highly automated, techniques and those based on geographic information systems have been evaluated at a test site, the City of New Martinsville, Wetzel County, West Virginia. The flood damage assessments of the test site developed from an automated, conventional structure-by-structure appraisal served as the ground truth data set.

## 40-3552

**Dynamic friction of bobsled runways on ice.**

Huber, N.P., et al, MP 2082, Le sport: Enjeu technologique. Edited by A. Midol and T. Mathia, Dec. 4, 1983, 26p., 10 refs.

Itagaki, K., Kennedy, F.E., Jr.  
**Metal ice friction, Sleds, Ice surface, Ice friction, Ice deterioration, Dynamic loads, Models, Experimentation, Statistical analysis.**

The challenge we have been presented with, to perfect the runners of the U.S. Bobsled Team's sled for the 1988 Winter Olympics in Calgary, requires an understanding of the experimentation performed by other researchers, the conclusions reached, and the limitations of their findings. Most of the ice friction studies to date have been made under more or less idealized conditions. Thus, in the highly dynamic situation of a bobsled or a skier sliding on a rough ice surface, a variety of unknown and disregarded factors may contribute greatly to the friction phenomena. For instance, none of the previous studies addressed the mechanical destruction of the ice surface, though carving or melting a track in the ice could account for most of the frictional energy loss. This paper describes the results of a preliminary study performed using a model sled.

## 40-3553

**Frontiers in hydraulic engineering.**

Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983, New York, American Society of Civil Engineers, 1983, 617p., Refs. passim. For selected papers see 40-3554 through 40-3565.

Shen, H.T., ed.

**Hydraulics, River ice, River flow, Ice cover effect, Ice mechanics, Ice jams, Meetings, Freezeup, Ice breakup, Ice forecasting, Floods.**

## 40-3554

**Frazil ice.**

Daly, S.F., MP 2078, Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.218-223, 8 refs.

**Frazil ice, Ice crystal growth, Ice structure, River ice, Nucleation rate, Streams, Analysis (mathematics).**

The study of crystal growth and its application to large scale industrial crystallization can provide many insights and quantitative approaches to the problems of frazil ice. Number continuity and heat conservation equations are presented in which the key parameters are crystal growth and nucleation rates. These parameters and frazil morphology are discussed. The problems of applying these equations to natural waterbodies are discussed. Further research needs are outlined.

## 40-3555

**Hydraulic resistance of river ice.**

Shen, H.T., Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.224-229, 25 refs.  
**River ice, River flow, Ice cover effect, Flow rate, Floating ice, Analysis (mathematics), Ice cover thickness, Ice jams.**

## 40-3556

**Ice jams.**

Beltaos, S., Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.230-235, 16 refs.  
**Ice jams, Ice breakup, River ice, Freezeup, Floating ice, Grounded ice, Ice cover thickness, Ice control.**

## 40-3557

**Simulation of lake ice dynamics.**

Rumer, R.R., Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.236-241, 11 refs.  
**Lake ice, Ice mechanics, Ice forecasting, Ice models, Analysis (mathematics).**

## 40-3558

**Effects of an ice cover—a conceptual model.**

Santeford, H.S., et al, Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.242-247, 1 ref.

Alger, G.R.

**Ice cover effect, River ice, Freezeup, Hydraulics, Ice breakup, Ice jams, Ice formation, River flow, Analysis (mathematics).**

40-3559

**Analysis of the variation of river stage in the freezing season for some cases on the Yellow River.**

Zanting, C., et al. Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.248-253. Zhaochu, S., Wencai, W.

**River ice, Freezup, Ice cover effect, River flow, Hydrography, Ice jams, Ice dams, China—Yellow River.**

40-3560

**Unsteady river flow beneath an ice cover.**

Ferrick, M.G., et al. MP 2079 Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.254-260, 9 refs.

Lemieux, G.E.

**River flow, Ice cover effect, River ice, Ice breakup, Freezing, Flooding, Ice jams, Water waves, Ice water interface.**

40-3561

**Floodplain delineation in ice-jam prone regions.**

Vogel, R.M., et al. Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.261-266, 9 refs.

Stedinger, J.R.

**Ice jams, River ice, Floods, River flow, Hydraulics, Models, Periodic variations.**

40-3562

**Computer modeling of ice jams.**

Churchill, A., Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.267-272, 12 refs.

**Ice jams, Ice models, Computer applications, River flow, Flood forecasting, Water level, Warning systems.**

40-3563

**First-generation model of ice deterioration.**

Ashton, G.D., MP 2080, Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.273-278, 12 refs.

**Ice deterioration, Ice models, Floating ice, Ice structure, River ice, Lake ice, Ice cover strength, Ice breakup, Heat transfer, Diurnal variations.**

The phenomenon of deterioration of ice, particularly of floating ice on rivers and lakes, is commonly observed during the spring period. The result of the deterioration is a porous, honeycomb-like structure, generally of low strength, and the greatly reduced strength contributes to the timing of ice break-up as well as significantly reducing the load-carrying capacity of the ice cover. A combined radiation-conduction heat transfer analysis is presented that predicts the diurnal strength variations associated with low surface albedo and internal melting. The results are compared with field data.

40-3564

**Laboratory study of river and ground icings.**

Ettema, R., et al. Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.279-284, 3 refs.

Schohl, G., Klindera, B.

**Naleds, Icing, River ice, Freezing, Soil water, Ice formation, Surface temperature, Air temperature, Ice surface, Experimentation.**

40-3565

**Modeling of ice discharge in river models.**

Calkins, D.J., MP 2081, Conference on Frontiers in Hydraulic Engineering, Cambridge, MA, Aug. 9-12, 1983. Proceedings. Edited by H.T. Shen, New York, American Society of Civil Engineers, 1983, p.285-290, 7 refs.

**River flow, River ice, Ice mechanics, Drift, Ice models, Heat transfer, Experimentation, Temperature effects, Hydraulics, Freezup.**

A thermal modeling criterion for the ice discharge in refrigerated physical river models is presented along with laboratory results. Ice production was evaluated for freshwater and for 0.3% and 1% urea concentrations in water. Discharges of 0.0056 and 0.0094 cu m/s were run in the model river at air temperatures of 5, 10 and 15°C. Preliminary results show that as the concentration of urea in the water is increased, the model ice outflow increases. The measured ice discharge at river outlet and the ice accumulation on the riverbed are both linearly related to the air-water temperature difference. The ice accumulation rate on the riverbed was also found to be a linear function of time. The freshwater flow had a greater bed accumulation rate than urea-doped solutions. A slight increase in model ice production was noted for the higher water flow

rates. Proper scaling of the ice discharge through a model reach may require relaxing the heat transfer coefficient scaling law because sufficient ice cannot be generated in the river, and ice must be introduced at the inlet of the model. By changing the urea concentration in the water or using a separate ice production flume, a wide range of values for the input of model ice discharge can be selected.

40-3566

**Studying sea-ice regime in the northwestern North Atlantic Ocean to develop ice forecasting methods for separate areas.** (Rezultaty issledovaniy ledovogo rezhima severo-zapadnoi Atlantiki i razrabotka metodik prognozirovaniia ledovykh uslovii v otdel'nykh ee ratonakh).

Kogan, B.A., et al. *Problemy Arktiki i Antarktiki*, 1985, Vol.61, p.16-22, In Russian. 7 refs. Orlov, N.F.

**Ice navigation, Ice surveys, Ice forecasting, Sea ice distribution, Ice conditions.**

40-3567

**Studying ice cover dynamics of the Barents Sea.** (Itogi issledovaniy dinamiki ledianogo pokrova Barentseva moria).

Zubakin, G.K., et al. *Problemy Arktiki i Antarktiki*, 1985, Vol.61, p.22-30, In Russian. 25 refs.

Zuev, A.N.

**Ice reporting, Sea ice distribution, Ice surveys, Drift, Tides, Ice edge, Polynyas.**

40-3568

**Investigating the pollution of Arctic sea waters.** (Zagryaznenie vod severnykh morei i problemy ego issledovaniy).

Potavin, V.A., et al. *Problemy Arktiki i Antarktiki*, 1985, Vol.61, p.42-47, In Russian. 14 refs.

Shcherbakov, O.N.

**Water pollution, Water transport, Sea ice distribution, Water chemistry, Statistical analysis, Arctic Ocean.**

40-3569

**Forecasting dangerous and hazardous hydrometeorological events in the Norwegian, Greenland and Barents seas, and the Kola Peninsula.** (Prognoz opasnykh i osobo opasnykh gidrometeorologicheskikh iavlenii na akvatorii Norvezhskogo, Grenlandskogo i Barentseva morei i Kol'skom poluostrove).

Polkhov, A.P., *Problemy Arktiki i Antarktiki*, 1985, Vol.61, p.47-52, In Russian. 14 refs.

**Ice storms, Ocean environments, Snowstorms, Alpine landscapes, Slope processes, Sea ice distribution, Drift, Avalanches.**

40-3570

**Design values of wind speeds of various probability for construction on Kola Peninsula.** (O raschetnykh skorostiakh vetra razlichnoi veroiatnosti dlia stroitel'nogo proektirovaniia na Kol'skom poluostrove).

Zykova, G.G., et al. *Problemy Arktiki i Antarktiki*, 1985, Vol.61, p.52-59, In Russian. 12 refs.

But, N.O.

**Permafrost beneath structures, Ice loads, Wind velocity, Arctic regions, Snow loads, Construction.**

40-3571

**Meteorological reports for economic development of Arctic regions.** (Nekotorye problemy meteorologicheskogo obespecheniia osvoiniia Severnykh morei).

Dement'ev, A.A., *Problemy Arktiki i Antarktiki*, 1985, Vol.61, p.59-64, In Russian. 17 refs.

**Ice navigation, Offshore drilling, Ice surveys, Hydraulic structures, Ice reporting, Ice loads, Sea ice distribution, Ice edge, Ice breakup.**

40-3572

**Meteorological and aerological conditions for the Novaya Zemlya bora winds.** (Meteorologicheskie i aerologicheskie usloviia novozemel'skol bory).

Dement'ev, A.A., et al. *Problemy Arktiki i Antarktiki*, 1985, Vol.61, p.64-70, In Russian. 6 refs.

Orlov, N.F., Skvortsova, T.N.

**Ice navigation, Wind velocity, Turbulence, Air temperature, Ship icing.**

40-3573

**Revegetation techniques in arctic and subarctic environments.**

Kubanis, S.A., Alaska Natural Gas Transportation System, Office of Environment, Biological Programs, Aug. 1982, 40p., Refs. p.28-40.

**Revegetation, Plant ecology, Growth, Soil erosion, Soil structure, Pipelines, Grasses, United States—Alaska.**

40-3574

**Sea shuttle: a multi-discipline multi-mission capable vehicle for deep ocean and under-ice applications.** Port Boody, B.C., Canada, Energy Conversion Systems, Inc., International Submarine Engineering, Ltd., (1983), 7p. + figs., 5 refs.

**Subglacial navigation, Ocean bottom, Vehicles, Ice cover effect, Petroleum industry, Exploration.**

40-3575

**Field investigation of tracks left by ice breaking vessels.**

Danielewicz, B.W., et al. Calgary, Alta., Dome Petroleum Ltd., Apr. 1983, 25p. + figs., 8 refs.

Pessah, E., Cornett, S.

**Ice breaking, Freezing, Ice cover strength, Ice crossings, Icebreakers, Bearing strength, Refreezing.**

40-3576

**Air cushion vehicle demonstration in Bethel, Alaska: costs, performance and impact.**

McCall, O., et al. *U.S. Urban Mass Transportation Administration. Report*, Mar. 1982, UMTA-MD-06-0058-83-1, 69p. PB83-175 398.

Scalzo, M.

**Air cushion vehicles, Cold weather operation, Transportation, Climatic factors, Cost analysis, Seasonal variations, Environmental impact, United States—Alaska—Bethel.**

40-3577

**Polyethylene glycol as an ice control coating.**

Itagaki, K., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1984, CR 84-28, 11p., ADA-150 466, 13 refs.

**Protective coatings, Ice control, Ice prevention, Resins, Melting points, Snow accumulation, Ice accretion, Countermeasures, Tests.**

The properties of polyethylene glycol (PEG) as a sacrificial ice control coating are discussed. PEG is effective longer than many single component coatings, and it has low toxicity and a high flash point. The results of preliminary experiments on PEG's ability to control snow accumulation on a panel and ice accumulation on a cryogenic tank are also discussed.

40-3578

**Reverse phase HPLC method for analysis of TNT, RDX, HMX and 2,4-DNT in munitions wastewater.**

Jenkins, T.F., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1984, CR 84-29, 95p., ADA-155 983, Refs. p.36-38.

Bauer, C.F., Leggett, D.C., Grant, C.L.

**Water pollution, Waste disposal, Explosives, Chemical analysis, Detection, Tests, Military facilities, Statistical analysis.**

An analytical method was developed to determine the concentrations of HMX, RDX, TNT and 2,4-DNT in munitions wastewater. The method involves dilution of an aqueous sample with an equal volume of methanol-acetonitrile solvent mixture, filtration through a 0.4 micron polycarbonate membrane and analysis of a 100 microL subsample by Reverse-phase, high-performance liquid chromatography using an LC-8 column. Retention times of these four analytes, their degradation products, and impurities expected in wastewater matrices were determined for two eluent compositions. An eluent of 50% water, 38% methanol and 12% acetonitrile successfully separated HMX, RDX and TNT from each other and the potential interferences. The method provided linear calibration curves over a wide range of concentrations.

40-3579

**Prototype drill for core sampling fine-grained perennially frozen ground.**

Brockett, B.E., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Jan. 1985, CR 85-01, 29p., ADA-152 388, 11 refs.

Lawson, D.E.

**Drills, Augers, Permafrost thermal properties, Frozen ground temperature, Coring, Sampling, Ground ice, Grain size, Temperature effects, Cost analysis.**

An inexpensive drill has been modified to provide researchers with the ability to auger an open hole or to acquire continuous, undisturbed 76-mm-diam core samples of a variety of perennially frozen materials that are suitable for chemical and petrographic analysis. It was developed by field testing in support of research from 1980 to 1983. Operation of the drill is based mainly on using a minimum of power to cut through frozen ground with tungsten carbide cutters on a CRREL coring auger. The ice content, temperature and grain size of the frozen sediments are important variables determining the sampling depth. Perennially frozen sediments with temperatures in the range of -0.5°C to -8.5°C have been continuously cored with this drill. Drilling and sampling are most efficiently conducted when ambient air temperatures are below freezing and the active layer is frozen. The self-contained lightweight drill is readily transportable off-road by helicopter or tracked vehicle, or by towing over roads. It is locally self-mobile by use of a winch. Total cost of the drill and modifications is estimated at approximately \$10,000.

## 40-3580

Conventional land mines in winter: Emplacement in frozen soil, use of trip wires and effect of freezing rain. Richardson, P.W., *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1984, SR 84-30, 23p., ADB-091 027, 9 refs.

Military engineering, Augers, Frozen ground, Snow cover, Mines (ordnance), Raia, Freezing, Seasonal variations.

This report presents information relating to land mine use in winter. Three areas are addressed: the emplacement of mines in frozen soil, the use of trip wires in snow, and the effect of freezing rain on antitank mines. Data from a minefield installation exercise provide information on the installation of a 100-m minefield under summer and winter conditions.

## 40-3581

Nitrogen removal in cold regions trickling filter systems.

Reed, S.C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Feb. 1986, SR 86-02, 39p., ADA-167 118, 19 refs.

Diener, C.J., Weyrick, P.B.

Waste treatment, Water treatment, Seepage, Chemical analysis, Temperature effects, Design, Heat loss, Polar regions.

Trickling filters are found in about 50% of the operating wastewater treatment systems owned by the U.S. Army, and more are likely for any new construction. Control of nitrogen, particularly ammonia in wastewater effluents, is a growing necessity. Ammonia can be removed in trickling filters but the process is temperature-dependent. This study combined an intensive literature review with data collection at full-scale and pilot-scale systems. These results are presented and evaluated. A liquid temperature of at least 7°C is necessary in the filter bed for effective ammonia removal, and a separate single-purpose filter bed dedicated for nitrification is recommended when significant ammonia removal is required at cold regions locations. Criteria and equations are derived for future cold region system designs.

## 40-3582

Comparison of winter climatic data for three New Hampshire sites.

Govoni, J.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1986, SR 86-05, 78p., ADA-167 427, 5 refs.

Smith, S.J.

Ice detection, Icing, Meteorological data, Climate, Dew point, Wind velocity, Wind direction, Precipitation (meteorology), Altitude, Humidity, United States—New Hampshire.

This data report contains climatological measurements for the winters of 1980-81 and 1981-82 made at three sites in New Hampshire situated at elevations of 155 m, 870 m and 1910 m above sea level. Parameters measured included wind speed and direction, precipitation, temperature, humidity, and duration of icing events. Comparison of the data provides the opportunity to examine the influence of elevation on atmospheric icing occurrence and intensity. In New Hampshire, icing appears to occur only at elevations above about 900 m.

## 40-3583

Description of the building materials data base for Pittsburgh, Pennsylvania.

Merry, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1986, SR 86-08, 87p., ADA-167 285, 15 refs.

LaPotin, P.J.

Construction materials, Precipitation (meteorology), Buildings, Environmental protection, Roofs, Chemical analysis, Statistical analysis, Cost analysis, United States—Pennsylvania—Pittsburgh.

A building materials sampling program for the Pittsburgh, Pennsylvania, region was conducted in December 1984 through February 1985 to examine the types and amounts of building surface materials exposed to acid deposition. A stratified, systematic, unaligned random sampling approach was used to generate sample points across six sampling frame areas. A minimum of 70 sample points was examined per sampling frame to yield a total sample size of 541 points. Building sizes, surface materials, roof characteristics, roof-mounted apparatus, chimneys, gutters, downspouts and fences were recorded. This report provides an initial summary of the data collected.

## 40-3584

Ice bands in turbulent pipe flow.

Ashton, G.D., *American Society of Mechanical Engineers. Winter annual meeting. Heat Transfer Division. Pamphlet paper*, 1984, 84-WA/HT-106, MP 2087, 7p., 10 refs.

Pipeline freezing, Pipe flow, Ice formation, Heat transfer, Ice surface, Turbulent flow, Heat flux, Flow rate, Experimentation, Surface roughness.

Results of experiments in two pipe sizes with annular freezing are reported. A wavy ice relief generally formed. The results are compared to a correlation previously proposed by Gilpin based on a thermal criterion and to a correlation developed by Ashton based on a kinematic criterion. The results are discussed within the context of these criteria.

## 40-3585

Model of 2-dimensional freezing front movement using the complex variable BE method.

Hromadka, T.V., II, et al, *Microsoftware for engineers*, Oct. 1985, 1(2), MP 2077, 9p., 7 refs.

Berg, R.L.

Soil freezing, Heat transfer, Freeze thaw cycles, Boundary value problems, Mathematical models, Soil water, Thermal regime, Computer applications, Latent heat, Phase transformations, Roads.

The Complex Variable Boundary Element Method or CVBEM is used to develop a computer model (CVBEM1) for estimating the location of the freezing front in soil-water phase change problems. Because the numerical technique is a boundary integral approach, the control volume thermal regime is modeled with respect to the boundary values and, therefore, the CVBEM1 data entry requirements are significantly less than that usually required of domain methods such as finite differences or finite elements. Soil-water phase change along the freezing front is modeled as a simple balance between computed heat flux and the evolution of soil-water volumetric latent heat of fusion.

## 40-3586

Ground ice in the northern Yenisey River area. (Podzemnye l'dy Eniseiskogo Severa), Karpov, E.G., Novosibirsk, Nauka, 1986, 133p., In Russian with English table of contents enclosed. Refs. p.123-133.

Ice structure, Permafrost beneath rivers, Permafrost structure, Ice sheets, Polar regions, Ice veins, River basins, Ice wedges.

## 40-3587

Seasonal cryolithozone of western Siberia. (Sezonnaya kriolitizona Zapadnoi Sibiri), Gilichinskiy, D.A., Moscow, Nauka, 1986, 144p., In Russian with English table of contents enclosed. Refs. p.122-129.

Mapping, Hydrothermal processes, Seasonal freeze thaw, Frost penetration, Frozen rocks, Human factors, Soil moisture migration, Geography, Lithology.

## 40-3588

Propeller shafts for the icebreaker *Rossia*. (Grebnnye valy dlia ledokola "Rossia"), Filimonov, G.N., et al, *Sudostroenie*, Apr. 1986, No.4, p.38-42, In Russian.

Osminin, B.A., Rebrov, L.V., Ermakov, V.I.

Propellers, Icebreakers, Design, Ice navigation, Metal ice friction.

## 40-3589

Experience with more effective use of floating docks. (Opyt povysheniia effektivnosti ispol'zovaniia plavuchikh dokov), Megrabov, G.A., et al, *Sudostroenie*, Apr. 1986, No.4, p.44-46, In Russian.

IAkovlev, A.M.

Floating structures, Docks, Icebreakers.

## 40-3590

Performance of basic construction points of the Baykal Amur railroad. (Rabota opornykh punktov na BAME), Talits, V.G., *Mekhanizatsiia stroitel'stva*, Apr. 1986, No.4, p.18-19, In Russian.

Earthwork, Excavation, Railroads, Construction equipment, Permafrost beneath structures.

## 40-3591

Structural design and pipe-laying techniques of the Yamburg gas-condensate field. (Konstruktivnye resheniia i sposoby prokladki truboprovodov na Iamburgskom gazokondensatnom mestorozhdenii), Spiridonov, V.V., *Stroitel'stvo truboprovodov*, Apr. 1986, No.4, p.6-7, In Russian.

Gas pipelines, Pipe laying, Permafrost beneath structures, Hydrates, Pipeline insulation, Foundations, Piles, Peat, Freeze thaw cycles.

## 40-3592

Mobile field-settlements for construction workers in the North. (Mobil'nye polevyie gorodki dlia stroitelei Severa), Zreliaikov, V.A., *Stroitel'stvo truboprovodov*, Apr. 1986, No.4, p.8-9, In Russian.

Modular construction, Permafrost beneath structures, Prefabrication, Panels, Thermal insulation, Reinforced concrete.

## 40-3593

Vibrational compaction of fine-grained and dusty sands in western Siberia. (Vibroploshchenie melkikh i pyl'evyatykh namynykh peskov Zapadnoi Sibiri), Kononov, P.A., et al, *Stroitel'stvo truboprovodov*, Apr. 1986, No.4, p.17-19, In Russian.

Kushnir, S.I.A., Churmanov, V.L.

Dredging, Construction equipment, Soil compaction, Sands, Pines.

## 40-3594

Chemical method of soil preparation for excavation in freezing weather. (Khimicheskii metod podgotovki gruntov k razrabotke v zimnikh usloviakh), Migliachenko, V.P., *Stroitel'stvo truboprovodov*, Apr. 1986, No.4, p.19, In Russian.

Soil freezing, Frost penetration, Chemical ice prevention, Ground ice, Pipe laying, Cold weather construction.

## 40-3595

New means of transportation for pipeline construction sites. (Novye transportnye sredstva dlia truboprovodnogo stroitel'stva), Kovalev, E.P., et al, *Stroitel'stvo truboprovodov*, Apr. 1986, No.4, p.28-29, In Russian.

Gubkin, O.I.

Panels, Transportation, All terrain vehicles, Swamps, Pipelines, Motor vehicles, Concrete structures, Prefabrication.

## 40-3596

Power supply installations of air-cushion vehicles. (Energeticheskie ustanovki transportnykh sredstv na vozdukhnoi podushke), Loginov, M.A., *Stroitel'stvo truboprovodov*, Apr. 1986, No.4, p.31, In Russian.

Air cushion vehicles, All terrain vehicles, Design, Transportation, Permafrost beneath structures.

## 40-3597

Modeling paludification processes in forest landscapes of the Karelian middle taiga. (Modelirovanie protsessa zabolachivaniia v lesnykh landshaftakh srednetaezhnoi podzony Karelii), Kolomytsev, V.A., *Geografiia i prirodnye resursy*, Jan.-Mar. 1986, No.1, p.66-71, In Russian. 11 refs.

Taiga, Forest land, Forest fires, Paludification, Forestry, Soil erosion, Landscape types.

## 40-3598

Podsol formation on the basic rocks of Central Siberia. (Podzoloobrazovanie na osnovnykh porodakh v Srednei Sibiri), Belousova, N.I., et al, *Geografiia i prirodnye resursy*, Jan.-Mar. 1986, No.1, p.71-80, In Russian.

Bergaut, V.V., Vasenev, I.I., Tsekhanovskaia, E.B.

Soil formation, Cryogenic soils, Podsol, Clays, Soil composition, Soil erosion.

## 40-3599

Thermal regime of the Yenisey River and its recent changes. (Osobennosti termicheskogo rezhima Eniseia i ego sovremennye izmeneniia), Odnova, T.V., et al, *Geografiia i prirodnye resursy*, Jan.-Mar. 1986, No.1, p.107-112, In Russian. 4 refs.

Nasedkina, T.D.

River basins, Permafrost beneath rivers, Microclimatology, Icebound rivers, Water temperature, Thermal regime.

## 40-3600

Reserve pores in water-saturated cement stone when freezing. (Rezervnye pory vodonasychennogo tsementnogo kamnia pri ego zamorazhivani), Shlaen, A.G., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1986, No.1, p.69-72, In Russian. 6 refs.

Shleiger, E.E.

Winter concreting, Cements, Porosity, Concrete freezing, Ice crystal growth, Frost action.

## 40-3601

Estimating the growth rate of frazil ice in the pneumatic protection zone. (K otsenke skorosti rosta vnutrivodnykh ledoobrazovani v zone pnevmaticheskoi zashchity), Abazaev, M.E., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1986, No.1, p.109-111, In Russian. 3 refs.

Ice formation, Ice crystal growth, Hydraulic structures, Icing, Frazil ice, Slush.

## 40-3602

Controlling the temperature and ice regime of tail waters in high-head hydroelectric plants. (Regulirovanie temperaturno i ledovogo rezhimov nizhnego b'efa vysokonapornykh gidrouzlov), Raspopin, G.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1986, No.2, p.85-91, In Russian. 10 refs.

Lakes, Ice conditions, Hydraulic structures, Temperature control.

40-3603

**Basis for the economic efficiency of road-pavement construction at subzero air temperatures.** [Obosnovanie ekonomicheskoi effektivnosti ustroistva dorozhnoi odezhdy pri otritsatel'nykh temperaturakh vozdukhaj].

Nosich, I.A., et al. *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1986, No.2, p.106-110, In Russian. 5 refs.

Kravchenko, V.G.

**Pavements, Concrete structures, Reinforced concretes, Winter concreting, Roads, Concrete freezing.**

40-3604

**Norwegian Polar Research Institute—central institute for mapping and research in norwegian polar regions.** [Norsk Polarinstitutt—sentralinstitutt for kartlegging og forskning i norske polarområder]. Oslo, 1984, 24p., In Norwegian and English.

**Research projects, History.**

40-3605

**Aeromagnetic survey, Transantarctic Mountains and Ross Sea, Antarctica.**

Dürbaum, H.-J., et al. *Germany. Federal Republic. Bundesanstalt für Geowissenschaften und Rohstoffe. BGR circular*, 1986, No.3, p.3-20.

Tessensohn, F.

**Geomagnetism, Geophysical surveys, Aerial surveys, Ice navigation, Geologic structures.**

The survey emphasized a geophysical program aimed at gaining information on the ice covered area between rock outcrops already mapped and investigated during earlier efforts. An additional objective was to connect the marine geology of the Ross Sea as inferred mainly from seismic data with the onland geology of Victoria Land. The chief tool of this program was an airborne survey measuring the magnetic properties of rocks under the ice and under the sea. The survey area was in central Victoria Land around Terra Nova Bay from the Polar Plateau through the Transantarctic Mountains out into the Ross Sea. It was necessary to have a narrow spacing of the survey lines to present the data in a magnetic map to facilitate geological interpretations. For this purpose very precise survey line navigation is essential. Over the mountains, control of the actual flight path is possible through aerial photography. To maintain precision navigation over the sea and over the ice cap a system of automatic transmitter stations, Trident/CPNS, placed on prominent topographical features was used. The execution of these planned objectives is reported and results are compared with earlier interpretations. (Auth. mod.)

40-3606

**Construction under winter conditions. Thermal insulation and energy savings.** [Stroitel'stvo v zimnikh usloviakh. Teplozashchita i ekonomia energii].

Kokki, P., et al. *Moscow, Stroizdat*, 1986, 83p., Translated from Finnish. English table of contents enclosed.

Mäkelä, H.

**Earthwork, Foundations, Winter concreting, Grouting, Masonry, Cold weather construction.**

40-3607

**Subsurface radar probing in engineering geology.** [Primenenie radiolokatsionnogo podpoverkhnostnogo zondirovaniia v inzhenernoi geologii].

Finkel'shtein, M.I., et al. *Moscow, Nedra*, 1986, 128p., In Russian with abridged English table of contents enclosed. 40 refs.

Kutev, V.A., Zolotarev, V.P.

**Radar echoes, Subsurface investigations, Permafrost depth, Permafrost hydrology.**

40-3608

**Minerals and mining in Antarctica: science and technology, economics and politics.**

De Wit, M.J., Oxford, Clarendon Press, 1985, 127p., Refs. p.109-123.

DLC TN126.D48 1985

**Natural resources, Economic development, Minerals, Geologic structures, Antarctica—Dufek Massif.**

It is proposed that widely held beliefs—that antarctic mineral wealth has yet to be established, that minerals may not be present in economically exploitable amounts, and that recovery costs would be prohibitive—are based on misleading assumptions. It is further proposed, based on advances in mining technology in the Arctic and geological similarities between areas of South Africa and the Dufek Massif, that a platinum mining operation in the Dufek Massif is not only feasible but desirable from the viewpoint of social/monetary benefits potentially achievable. An elaborate feasibility plan is drawn up for such a mine; a scenario is presented on the future of antarctic mineral resources; and the geological history of Antarctica is substantially reviewed towards establishing an antarctic mineral resources inventory. Throughout the essay criticisms of the Antarctic Treaty System are prevalent, even to demeaning its significant achievements; base motivations are implied or ascribed to ATS members, numerous facts are presented and mostly interpreted to the detriment of ATS members. Achievement of the author's major proposal, the Dufek mining operation, is discussed in terms of its expected geopolitical benefits.

40-3609

**Ice engineering facility.**

Zabilansky, L.J., et al. *MP 2088*, [1983], 12p. + fig. Prepared for the International Institute of Ammonia Refrigeration, 5th annual meeting, Sarasota, FL, April 17-20, 1983.

Alexander, V.

**Ice surveys, Laboratories, Equipment, Ice navigation, Ice formation, Ice loads, Ice jams, Engineering, Icing, Floods, Heat recovery.**

40-3610

**Data acquisition in USACRREL's flume facility.**

Daly, S.F., et al. *MP 2089*, Specialty Conference on Hydraulics and Hydrology in the Small Computer Age, Lake Buena Vista, FL, Aug. 12-17, 1985. Proceedings, Vol.2. Edited by W.R. Waldrop, New York, American Society of Civil Engineers, 1985, p.1053-1058, 1 ref.

Wuebben, J.L., Zabilansky, L.J.

DLC TC163.H926

**Laboratories, Computer applications, Refrigeration, Ice formation, Hydraulics, Sediment transport, Fracture, Ice, Unsteady flow, Ice cover effect, Equipment.**

The refrigerated flume facility at the U.S. Army Cold Regions Research and Engineering Laboratory (USACRREL), Hanover, New Hampshire, consists of a tiltable flume that is 120 ft long, 4 ft wide and 2 ft deep (36.6 x 1.2 x 0.61 m), two constant-speed centrifugal pumps and associated piping, flow meters, heat transfer devices, automatic valves, etc. The flume is an experimental facility used to study the formation of frazil ice, temperature effects on sediment transport, unsteady flow under an ice cover, and other subjects relevant to cold regions hydraulics. A computerized data acquisition system has been developed that is based on a Hewlett-Packard 9845B desktop computer.

40-3611

**Cazenovia Creek Model data acquisition system.**

Bennett, B.M., et al. *MP 2090*, Specialty Conference on Hydraulics and Hydrology in the Small Computer Age, Lake Buena Vista, FL, Aug. 12-17, 1985. Proceedings, Vol.2. Edited by W.R. Waldrop, New York, American Society of Civil Engineers, 1985, p.1424-1429, 4 refs.

Zabilansky, L.J.

DLC TC163.H926

**Models, Ice breakup, Computer applications, River ice, Ice control, Ice jams, Tests, Engineering, Structures, Design, Countermeasures.**

The Cazenovia Creek Model is a physical hydraulic model constructed in the 160-ft x 80-ft (48.8-m x 24.4-m) refrigerated research area of the Ice Engineering Facility at the U.S. Army Cold Regions Research and Engineering Laboratory located in Hanover, New Hampshire. The purpose of the model is to reproduce river ice breakup phenomena for optimizing the design of an ice control structure. The optimal design will delay or ultimately prevent the passage of ice floes, eliminating downstream ice jam flooding. The performance of the ice control structure during a simulated breakup is monitored by using an interactive real-time data acquisition system. The data acquisition system is governed by a Hewlett-Packard 9845A desktop computer and enables a rapid analysis of the work because of the real-time monitoring. This paper discusses the model and its method of data collection.

40-3612

**Instrumentation for an uplifting ice force model.**

Zabilansky, L.J., *MP 2091*, Specialty Conference on Hydraulics and Hydrology in the Small Computer Age, Lake Buena Vista, FL, Aug. 12-17, 1985. Proceedings, Vol.2. Edited by W.R. Waldrop, New York, American Society of Civil Engineers, 1985, p.1430-1435, 4 refs.

DLC TC163.H926

**Models, Offshore structures, Computer applications, Freezep, Ice pressure, Ice loads, Engineering, Water level, Pile structures, Uplift pressure.**

Marine structures frozen into an ice cover are subjected to vertical forces as the ice sheet responds to changes in the water level. Pile-supported, light duty structures are especially vulnerable to the uplifting forces, which can extract the piles from the soil, destroying the structure's integrity. To evaluate the parameters that control the magnitude of the uplifting force a laboratory model study was conducted in a refrigerated test basin.

40-3613

**Hydrological applications of remote sensing and remote data transmission.**

Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983, *International Association of Hydrological Sciences. Publication*, 1985, No.145, 684p., Refs. passim. With French summaries. For selected papers see 40-2815 through 40-2817, and 40-3614 through 40-3636.

Goodison, B.E., ed.

**Hydrology, Remote sensing, Snow water equivalent, Snow cover distribution, Ice jams, Ice conditions, Data transmission, Meetings, Flood forecasting, Ice detection.**

40-3614

**Existing and future satellite systems for hydrological applications.**

Yates, H.W., et al. *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.3-15, 21 refs.

**Hydrology, Snow cover distribution, Remote sensing, Runoff forecasting, Microwaves, Water supply, Flood forecasting, Mapping, Models.**

40-3615

**"Meteor" type space vehicles for solving hydrological problems.**

Kuprianov, V.V., *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.17-24, 1 ref.

**Remote sensing, Hydrology, Snowmelt, Runoff forecasting, Ice cover, Snow cover distribution, Microwaves, Radiometry.**

40-3616

**RADARSAT and MSAT: proposed Canadian satellite systems with hydrological applications.**

Goodison, B.E., et al. *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.75-85, 6 refs.

Langham, E.J., Athanassiadis, D.

**Remote sensing, Hydrology, Sea ice, Icebergs, Oceanography, Geology.**

40-3617

**Hydrological study in Greenland using the Argos system.**

Thomsen, T., *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.125-133, 3 refs.

**Remote sensing, Glacial hydrology, Drainage, Runoff, Greenland.**

40-3618

**Water resources sensor characteristics for GOES retransmission in Canada.**

Whiting, J.M., *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.159-169, 9 refs.

**Water reserves, Remote sensing, Hydrology, Snow cover, Precipitation (meteorology), Meteorological data, Canada.**

40-3619

**Spatial transfer of precipitation data using Landsat imagery.**

Bagchi, A.K., *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.289-294, 5 refs.

**Remote sensing, Precipitation (meteorology), Snow depth, Snow cover distribution, Snow water equivalent, LANDSAT, Mountains, Distribution, Snowfall, Altitude, Himalaya Mountains.**

40-3620

**Quantitative measurements of snowfall using unattended mountain top radar.**

Kleppe, J.A., et al. *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.335-343, 17 refs.

Liu, S.L.

**Snowfall, Radar, Mountains, Flood control, Cloud seeding, Trafficability, Computer applications.**

## 40-3621

Remote sensing of snow cover with passive and active microwave sensors.

Rott, H., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.361-369, 6 refs.

Künzi, A.F.

Snow cover distribution, Remote sensing, Microwaves, Runoff, Snow water equivalent, Snowmelt, Snow hydrology, Drainage, Mapping.

## 40-3622

Snow mapping in Greenland based on multi-temporal satellite data.

Sogaard, H., *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.383-393, 11 refs.

Snow cover distribution, Remote sensing, Snowmelt, Albedo, Topographic effects, Mapping, Snow water equivalent, Runoff, Radiometry, Greenland.

## 40-3623

Snow cover on the Stanovoe Upland determined by satellite imagery.

Prokacheva, V.G., *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.395-399.

Snow cover distribution, Remote sensing, Runoff, Snowmelt, Snow hydrology, Snow line, Mountains, Altitude, USSR—Stanovoy Mountains.

## 40-3624

Studies of Himalayan snow cover area from satellites.

Dhanju, M.S., *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.401-409, 8 refs.

Snow cover distribution, Remote sensing, Snow line, Air temperature, Meltwater, Mass balance, Seasonal variations, Temperature variations, Himalaya Mountains.

## 40-3625

Use of aerial gamma surveys of snowpack for spring snowmelt runoff forecasts.

Vershinina, L.K., *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.411-420, 8 refs.

Snowmelt, Runoff forecasting, Snow water equivalent, Snow cover distribution, Gamma irradiation, Aerial surveys, Accuracy.

## 40-3626

Snow mapping and hydrological forecasting by airborne gamma-ray spectrometry in northern Sweden.

Bergström, S., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.421-428, 3 refs.

Brandt, M.

Snow cover distribution, Snow hydrology, Remote sensing, Snow accumulation, Snowmelt, Spectroscopy, Forecasting, Mapping, Gamma irradiation, Sweden.

## 40-3627

Field experiments on propagation of 10 and 30 GHz waves through a snow cover.

Matsumoto, T., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.429-437, 3 refs.

Suzuki, M., Kuroiwa, D., Fujino, K., Wakahama, G. Microwaves, Snow cover effect, Wave propagation, Attenuation, Snow depth, Snow crystal structure, Snow cover structure, Diurnal variations, Temperature effects.

## 40-3628

Studying aulofs by aerial and satellite survey imagery.

Abakumenko, A.E., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.439-444, 7 refs.

Usachev, V.F.

Naleds, Remote sensing, Aerial surveys, Icing, River ice, Photography.

## 40-3629

Studying lake ice regimes by remote sensing methods.

Borodulin, V.V., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.445-450, 4 refs.

Prokacheva, V.G.

Lake ice, Ice conditions, Remote sensing, Ice forecasting, USSR—Ladoga Lake.

## 40-3630

Study of spectral reflection characteristics for snow, ice and water in the north of China.

Qunzhu, Z., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.451-462, 2 refs.

Remote sensing, Spectra, Snow optics, Ice optics, Water flow, Metamorphism (snow), Reflection, Suspended sediments, Turbulent flow, Snowmelt.

## 40-3631

Satellite information for surface water research.

Kuprianov, V.V., *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.465-474, 8 refs.

Remote sensing, Hydrology, Runoff, Ice conditions, Water reserves, Models, Floods, Precipitation (meteorology).

## 40-3632

Combining measurement of hydrological variables of various sampling geometries and measurement accuracies.

Peck, E.L., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.591-599, 5 refs.

Johnson, E.R., Keefer, T.N., Rango, A.

Hydrology, Remote sensing, Snow water equivalent, Accuracy, Models.

## 40-3633

Development and testing of a remote sensing based hydrological model.

Groves, J.R., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.601-612, 6 refs.

Ragan, R.M., Clapp, R.B.

Hydrology, Remote sensing, Stream flow, Snow cover distribution, Models, Snow water equivalent, Cloud cover, Runoff, Computer applications.

## 40-3634

Use of remote sensing to improve the accuracy of simulation of snow-melt runoff by the CEQUEAU model. (Utilisation de la télédétection pour améliorer la précision des crues de fonte de neige simulées par le modèle CEQUEAU).

Fortin, J.P., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.613-623, In French with English summary 7 refs.

Morin, G., Suchanska, W., Potvin, L.

Snow cover distribution, Floods, Snowmelt, Remote sensing, Snow water equivalent, Hydrology, Models, Meteorological data, Canada—Quebec.

## 40-3635

Application of remote sensing for seasonal runoff prediction in the Indus basin, Pakistan.

Dey, B., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.637-645, 12 refs.

Goswami, D.C.

Runoff forecasting, Remote sensing, Snow cover distribution, River flow, Snowmelt, Seasonal variations, Models, Accuracy, Pakistan—Indus River.

## 40-3636

Operational requirements for water resources remote sensing in Canada: now and in the future.

Goodison, B.E., et al, *International Association of Hydrological Sciences. Publication*, 1985, No.145, Symposium on Hydrological Applications of Remote Sensing and Remote Data Transmission, Hamburg, FRG, Aug. 18-25, 1983. Proceedings. Edited by B.E. Goodison, p.647-657, 13 refs.

Whiting, J.M., Wiebe, K., Cihlar, J.

Snow cover distribution, Remote sensing, Snowmelt, Hydrology, Water reserves, Glacial hydrology, River ice, Lake ice, Canada.

## 40-3637

Experimental study of frost heaving of saturated soils under overburden pressure.

Ishizaki, T., Dec. 1985, 98p., Unpublished manuscript. Refs. p.94-98.

Frost heave, Soil water migration, Ice lenses, Frozen ground physics, Loads (forces), Ice growth, Temperature gradients, Flow rate, Experimentation.

## 40-3638

Real-time measurements of uplifting ice forces.

Zabilansky, L.J., *Instrumentation in the aerospace industry*, 1985, Vol.31, MP 2092, p.253-259, 2 refs.

Ice solid interface, Pile extraction, Ice loads, Pile load tests, Offshore structures, Damage, Countermeasures, Computer applications.

## 40-3639

Exotic patterns appear in water when it is freezing or melting.

Walker, J., *Scientific American*, July 1986, 255(1), p.114-120, 3 refs.

Freezing, Ice crystal structure, Ice growth, Ice physics, Tyndall figures.

## 40-3640

Report of Operation Deep Freeze 86, 1985-1986.

U.S. Naval Support Force Antarctica, 1986, var. p.

Expeditions, Sea ice, Logistics, Antarctica.

The two factors which most often tend to be the crucibles of antarctic expeditions, sea ice and the weather, were in true form during this season. The sea ice edge exceeded its previous climatological maximum northward extent, it was thicker, it lasted longer, and summertime coverage was sufficient to require icebreaker support through most of the season. The weather at times and at various places gave no problems. At other times and other places it disrupted logistics flight schedules completely, putting scientific needs in direct competition with resupply transport requirements. In spite of both weather and ice the operation was a resounding success. Details are given in categories of operations, public works, logistics, communications and electronics, medical and dental, and administration. Two events, one a beginning, the other an end are symbolic of Antarctica: an Italian party participated for the first time, surveying possible station sites near Terra Nova Bay. The unforgiving nature of Antarctica was shown when the support vessel for a private expedition, the M/V *Southern Quest*, having arrived at Ross Island during the first week in January, was beset in pack ice east of Beaufort Island on Jan. 11, sustained major hull damage, and sank. All aboard were rescued.

## 40-3641

Joint Services Expedition to Brabant Island, Antarctica, December 1983-April 1985.

Furse, C., et al, 1985, 124p.

Expeditions, Shelters, Snow vehicles, Logistics, Transverses, Antarctica—Brabant Island.

This is the official report of the expedition which explored Brabant I. between Jan. 8, 1984 and Mar. 16, 1985. Brabant I. lies off the west coast of the Antarctic Peninsula at about 64S. Separated from the main peninsula by Gerlache Strait, the island is about 40 mi long and 15 mi wide. The format of the report is a set of team diaries giving accounts of the various parties as they explored different parts of the island, testing routes and establishing caches for follow-on groups. Although the report does not include results of scientific work, brief outlines of scientific projects are given in appendices. The expedition had set out to test the possibility that teams could survive and operate under antarctic winter conditions in tents and snow huts without a base camp. They showed that it could be done, at least in the Antarctic Peninsula region.

40-3642

Surface area of Antarctica and the ice shelves based on new cartographic data. [Ploshchad' Antarktidi i shel'fovykh lednikov (po novym kartograficheskim materialam)]. Suetova, I.A., *Antarktika: doklady komissii*, 1986, No.25, p.50-60, In Russian. 9 refs.

Ice shelves, Ice sheets, Topographic surveys, Antarctica.

Based on new cartographic data, assessments are made of the antarctic continental surface area, the East Antarctic ice shelves, the West Antarctic ice shelves, and the adjoining islands. Figures, in sq. km, are presented for the years 1961, 1964, 1971 and 1984, the shelf-ice margin variations over various years are shown on maps. Analysis of the new data uncovers surface-measurement errors in the 1964 data. It is concluded that, according to the latest measurements, Antarctica, including the ice shelves and the adjoining islands, covers an area of 13,980,000 sq km.

40-3643

Classification and forecasting of ice edge position in the Atlantic part of the Antarctic. [Klassifikatsiya i prognozirovaniye polozheniya kromki l'da v Atlanticheskoy sektore Antarktiki]. Iakovlev, V.N., et al, *Antarktika: doklady komissii*, 1986, No.25, p.66-73, In Russian. 5 refs.

Altman, I.U.S.

Ice edge, Ice forecasting, Sea ice distribution, Air temperature, Weather forecasting, South Atlantic Ocean.

Described is a method of spatial-temporal classification and its application to mean monthly ice-edge position at longitudes 75W-40E, every 5 deg, and mean monthly values of air temperature and pressure at 13 stations, between Oct. 1979 and Dec. 1983. The most promising prognostic parameters were selected, and applied, by an iterative method, to various experimental forecasts. As a result, the most promising forecasting models were identified and are recommended for practical application.

40-3644

Computations of antarctic ice sheet bed topography along a streamline from Dome B to Mirnyy Observatory from the glacier elevation data. [Raschet rel'efa lozha lednikovogo pokrova Antarktidi vdol' linii toka kupol B-observatorii Mirnyy po dannym izmereniy vyssoty poverkhnosti lednika]. Salamatina, A.N., et al, *Antarktika: doklady komissii*, 1986, No.25, p.74-77, In Russian. 10 refs.

Mazo, A.B., Sheremet'ev, A.N., Potapenko, V.I.U.

Analysis (mathematics), Ice models, Bottom topography, Glacier beds, Profiles, Glacier surfaces, Antarctica—Dome B, Antarctica—Mirnyy Station.

The computation of the subglacial topography of the glacier bed between Dome B and Mirnyy Station, based on a mathematical model constructed from data on the glacier's height, is discussed and illustrated from the point of interest of the method's reliability. Since the results of the computation correlate with data obtained by other methods in constructing profiles of the glacier bed, it is concluded that the method used in this study is reliable.

40-3645

Geocryological description of Schirmacher Ponds. [Geokriologicheskii ocherk oazisa Shirmakhera]. Vuurim, B.L., *Antarktika: doklady komissii*, 1986, No.25, p.78-87, In Russian. 17 refs.

Permafrost, Stratigraphy, Frost weathering, Frost heave, Frozen rocks, Sorting, Geocryology, Nivation, Antarctica—Schirmacher Ponds.

The great severity of geocryological conditions of the Schirmacher Ponds places them in the intracontinental zone of Antarctica. The seasonal melting of rocks does not exceed 0.8 m. Among cryogenic processes, the most active are frost weathering, nivation, heaving, sorting, and sliding. The cryostructural microrelief is well developed. The permafrost layer is polygenetic, has two horizons, with a thin upper syngenetic layer. The ice content of loose rocks is insignificant.

40-3646

Reconstruction of the Late Valdaian antarctic ice sheet. [Novaya rekonstruktsiya pozdnevaldaiskogo Antarkticheskogo lednikovogo pokrova]. Miagkov, S.M., *Antarktika: doklady komissii*, 1986, No.25, p.88-98, In Russian. Refs. p.97-98.

Paleoclimatology, Glaciation, Ice sheets, Ice cover thickness, Ice models.

Changes of the antarctic ice sheet, occurring in response to climate and sea-level changes in the last 150 th. y., were determined on the basis of the newest mathematical modeling methods. It is found that the ice sheet did not reach a state of equilibrium with the climate of the present. A maximum retreat occurred during the Mikulin Interglacial period, the minimum, during the Early Valdaian. The ice-sheet volume varied within 10% of the present volume. In the Late Valdaian period, the ice sheet was not as large as it appears on earlier reconstructions, which were based on the assumption of the cover's balance with Valdaian climate.

40-3647

Thermophysics of antarctic lakes. [Teplofizika ozer oazisov Antarktidi]. Krass, M.S., *Antarktika: doklady komissii*, 1986, No.25, p.99-124, In Russian. 33 refs.

Lake ice, Limnology, Hydrology, Ice thermal properties, Ice density.

The following features of antarctic lakes and ponds are investigated: radiation balance, air temperature, length and width (in km), depth (in m), water temperature (maximum and mean), and type (glacier or shelf). A mathematical model of the lakes' thermophysics is developed, and found reliable for the determination of regularities in the occurrence and evolution of different types of antarctic lakes. Solar radiation penetrating through the ice cover is found to be the main heat source responsible for the existence of the lakes and their relatively high temperatures.

40-3648

Hydrological work on Beaver shelf-ice lake. [Gidrologicheskie raboty na epishel'fovom ozere Beaver].

Platon, A.B. et al, *Antarktika: doklady komissii*, 1986, No.25, p.126-132, In Russian. 5 refs.

Klokov, V.D.

Lake ice, Limnology, Glacier ice, Ice shelves, Antarctica—Beaver Lake, Antarctica—Radok Lake.

Investigations carried out on two antarctic shelf-ice lakes, Beaver and Radok, in the summer of 1983-1984, show the following: Beaver Lake has a year-round ice cover 3-6 m thick in summer, max. water depth of 200-250 m, temperature of 0.03-0.33 C, bottom water temperature of -2.1 C, and salt content of 32%. Radok Lake also has a year-round ice cover 0.20 to 2.10 m thick in Feb., max. water depth of 346 m, and temperature of 0.8-1.0 C. Bathymetric measurements of both lakes are presented.

40-3649

Peculiarities of the formation of chemical composition of atmospheric precipitation and its transformation in the periglacial zone of the East Antarctic ice sheet. [Osobennosti formirovaniia khimicheskogo sostava atmosferykh osadkov i ego transformatsiia v periglatsial'noi zone lednikovogo pokrova Vostochnoi Antarktidi]. Shmideberg, N.A., *Antarktika: doklady komissii*, 1986, No.25, p.143-161, In Russian. Refs. p.159-161.

Snow composition, Chemical composition, Atmospheric composition, Precipitation (meteorology), Air pollution, Lake water, Ice composition, Glacier ice, Ice sheets, Antarctica—East Antarctica.

The article contains the following: a summary of the peculiarities of the formation of chemical composition of natural waters, including atmospheric precipitation and lake waters, in the marginal periglacial zone of the antarctic ice sheet; an analysis of original methods of interpretation of hydrochemical data in lake waters, and a critical assessment of analytical methods for the determination of chemical constituents. Current scientific literature on atmospheric precipitation and lake water is reviewed.

40-3650

Central Antarctic glacier as an object of investigations of prolonged anabiosis of microorganisms in nature. [Lednik Tsentral'noi Antarktiki kak ob'ekt dlia izucheniia dlitel'nogo anabioza u mikroorganizmov v prirode]. Abyzov, S.S., et al, *Antarktika: doklady komissii*, 1986, No.25, p.202-208, In Russian. 11 refs.

Fungi, Ice cores, Cryobiology.

During the 20th, 21st, 22nd, and 25th Soviet antarctic expeditions, microbiological investigations were carried out on ice cores at Vostok Station using special drilling equipment and a tried method of aseptic recovery tests. An insignificant content of viable microorganisms was found in different ice layers. Among the organisms found, different taxonomic groups were represented. A new species of Actinomyces, *Nocardopsis antarctica*, was found in a layer more than 2,000 y old. Principles of distribution of various microorganisms are established according to their survival capability in ice layers of different age.

40-3651

Soil climate in the central Ob' River area. [Klimat pochv Srednego Priob'ia]. Az'muka, T.I., Novosibirsk, Nauka, 1986, 121p., In Russian with English table of contents enclosed. Refs. p.115-120.

Taiga, Active layer, River basins, Permafrost distribution, Permafrost beneath rivers, Soil formation, Cryogenic soils, Permafrost hydrology, Mapping.

40-3652

Results of scientific-functional provisions for navigation and other branches of the national economy in the Arctic. [Rezultaty nauchno-funktsionnogo obespecheniia sudokhodstva i drugih otraslei narodnogo khoziaistva v Arktike]. Borodachev, V.E., et al, *Problemy Arktiki i Antarktiki*, 1985, Vol.60, p.25-29, In Russian.

Ice navigation, Ice reporting, Ice forecasting.

40-3653

Calculating the temperature and melting of polluted snow-ice cover. [Osnovy rascheta temperatury i tainiia zagriaznennogo snezhno-ledianogo pokrova]. Izmailov, V.V., *Problemy Arktiki i Antarktiki*, 1985, Vol.60, p.33-40, In Russian. 10 refs.

Water pollution, Snow cover distribution, Oil spills, Ice melting, Drift, Arctic Ocean.

40-3654

Heat and moisture exchange between fast ice and atmosphere in the Alasheev Bight. [Teplo- i vlagobmen antarkticheskogo priipaia s atmosferoi v zalive Alasheeva]. Nazintsev, I.U.L., *Problemy Arktiki i Antarktiki*, 1985, Vol.60, p.40-46, In Russian. 5 refs.

Fast ice, Evaporation, Heat balance, Ice air interface, Air temperature, Antarctica—Alasheev Bight.

Data from investigations carried out on fast ice and atmospheric temperature at Alasheev Bight from May through Dec., 1971, are presented. Air temperature, wind speed, and moisture exchange values are tabulated, as are monthly measurements of turbulent heat exchange and heat of evaporation in the atmospheric layer next to the ice. A relationship is established between turbulent heat flow and radiation balance of the ice surface.

40-3655

Analysis of hydrochemical elements and pollutants in waters of polar regions. [Osobennosti analiza gidrokhimicheskikh elementov i zagriazniashchikh veshchestv v vodakh poliarnykh oblastey]. Mel'nikov, S.A., et al, *Problemy Arktiki i Antarktiki*, 1985, Vol.60, p.77-85, In Russian. 10 refs.

Rachkov, V.S., Vodovatova, S.N., Dmitriev, F.A.

Wastes, Water pollution, Infrared spectroscopy, Impurities, Oil spills, Polar regions, Snow composition, Chemical composition, Measuring instruments, Ice composition, Sea ice distribution.

40-3656

Studying large-scale flow of sea ice from spaceborne television photographs. [Issledovanie krupnomasshtabnykh potokov morskikh l'dov po televizionnym snimkam s iskusstvennykh sputnikov Zemli]. Karelin, I.D., *Problemy Arktiki i Antarktiki*, 1985, Vol.60, p.86-93, In Russian. 13 refs.

Radar photography, Spaceborne photography, Sea ice distribution, Drift, Aerial surveys, Photointerpretation.

40-3657

Under-ice reverberation rejection. Hodgkiss, W.S., Jr., et al, *IEEE journal of oceanic engineering*, July 1985, OE-10(3), p.285-289, 10 refs.

Alexandrou, D.

Underwater acoustics, Ice cover effect, Sea water, Resonance, Acoustic measurement, Backscattering, Transmission.

40-3658

Mixed layer dynamics in a lake near the temperature of maximum density. Farmer, D.M., International Symposium on Stratified Flows, 2nd, Trondheim, Norway, June 24-27, 1980. Proceedings, [1980], p.998-1007, 8 refs.

Lake water, Water temperature, Thermal regime, Density (mass/volume), Turbulent flow, Temperature distribution, Heat flux, Atmospheric pressure, Analysis (mathematics).

40-3659

D.C. conductivity of the ice surface. Turner, G.J., et al, *Solid state communications*, 1986, 58(6), p.403-405, 12 refs.

Stow, C.D.

Ice electrical properties, Electrical resistivity, Low temperature tests, Temperature effects, Ice air interface, Ice surface, Models.

40-3660

Boundary integral equation solution of moving boundary phase change problems. O'Neill, K., *International journal for numerical methods in engineering*, 1983, Vol.19, MP 2093, p.1825-1850, 47 refs.

Soil freezing, Analysis (mathematics), Boundary value problems, Phase transformations, Convection, Stefan problem, Temperature gradients, Pipes (tubes).

Boundary integral equation methods are presented for the solution of some two-dimensional phase change problems. Convection may enter through boundary conditions, but cannot be considered within phase boundaries. A general formulation based on space-time Green's functions is developed using the Laplace equation. The latter is pursued and applied in detail. An elementary, noniterative system is constructed, featuring linear interpolation over elements on a polygonal boundary. Nodal values of the temperature gradient normal to a phase change boundary are produced directly in the numerical solution. The system performs well against basic analytical

solutions, using these values in the interphase jump condition, with the simplest formulation of the surface normal at boundary vertices. Because the discretized surface changes automatically to fit the scale of the problem, the method appears to offer many of the advantages of moving mesh finite element methods. However, it only requires the manipulation of a surface mesh and solution for surface variables. In some applications, coarse meshes and very large time steps may be used, relative to those which would be required by fixed grid domain methods. Computations are also compared to original lab data, describing two-dimensional soil freezing with a time-dependent boundary condition. Agreement between simulated and measured histories is good.

40-3661

Lake cover research in northern Quebec and Labrador.

Adams, P., McGill University, Montreal. Sub-arctic Research Laboratory, Shefferville, Que. McGill sub-arctic research papers, 1984, No.39, p.109-124, With French summary. Refs. p.120-124.

Lake ice, Snow cover distribution, Ice conditions, Ice formation, Ice breakup, Freezep, Ice forecasting, Models.

40-3662

Diurnal thermal forcing and hydrological response of Lewis Glacier, Mount Kenya.

Hastenrath, S., Archiv für Meteorologie, Geophysik und Bioklimatologie. Ser. A, 1983, 32(4), 361-373, With German summary. 7 refs.

Glacial hydrology, Glacier mass balance, Ice thermal properties, Runoff, Diurnal variations, Glacier melting, Heat flux, Heat loss, Drainage, Kenya—Lewis Glacier.

40-3663

Model of near-surface coupled-flow effects on the diurnal thermal regime of a peat-covered tundra.

Outcalt, S., et al, Archiv für Meteorologie, Geophysik und Bioklimatologie, 1985, Vol.33, p.345-354, With German summary. 8 refs.

Nelson, F.  
Frost mounds, Thermal regime, Peat, Soil water migration, Ice cover, Ablation, Diurnal variations, Evaporation, Water temperature, Models.

40-3664

Effect of subarctic woodland vegetation on the radiation balance of a melting snow cover.

Lafleur, P., et al, Archiv für Meteorologie, Geophysik und Bioklimatologie. Ser. A, 1986, Vol.34, p.297-310, With German summary. 18 refs.

Adams, P.  
Snowmelt, Solar radiation, Vegetation factors, Forest canopy, Heat balance, Albedo.

40-3665

Biomorphological adaptations of plants in the Far North. (Biomorfologicheskie adaptatsii rastenii Krainego Severa).

Mazurenko, M.T., Moscow, Nauka, 1986, 209p., In Russian with abridged English table of contents enclosed. Refs. p.196-208.

Plants (botany), Cryogenic soils, Permafrost distribution, Active layer, Acclimatization, Arctic landscapes, Permafrost hydrology, Alpine landscapes.

40-3666

Was the Greenland ice sheet thinner in the late Wisconsinan than now?

Reeh, N., Nature, Oct. 31, 1985, 317(6040), p.797-799, 20 refs.

Ice sheets, Ice cover thickness, Ice structure, Ice accretion, Ablation, Greenland.

40-3667

Flow law for ice in polar ice sheets.

Paterson, W.S.B., Nature, Nov. 7, 1985, 318(6041), p.82-83, Comment on Doake and Wolff (39-3887 or F-32088) and reply. 14 refs.

Doake, C.S.M., Wolff, E.W.  
Glacier flow, Ice creep, Ice mechanics, Ice shelves, Shear stress, Strains.

In the article being critiqued, Doake and Wolff presented a different theory of relationships between strain rate and stress in the ice flow law. The present author refutes their argument, presenting seven points of difference. In reply, Doake and Wolff address each of these points and reaffirm their original contention. Ice sheets in both the Arctic and Antarctic are considered.

40-3668

Glaciers as indicators of a carbon dioxide warming. Oerlemans, J., Nature, Apr. 17, 1986, 320(6063), p.607-609, 14 refs.

Mountain glaciers, Carbon dioxide, Temperature variations, Radiation balance.

40-3669

Estimating meltwater losses and forecasting the volume of flood-water runoff. (Otsenka poter' talykh vod i prognozy ob'ema stoka polovod'ia), Vershinina, L.K., et al, Leningrad, Gidrometeoizdat, 1985, 189p., In Russian with English summary. 115 refs.

Krestovskii, O.I., Kaliuzhnyi, I.L., Pavlova, K.K.  
Flooding, Frost penetration, Snow water equivalent, Meltwater, Soil water migration, Volume, Seepage, Seasonal freeze thaw, Mathematical models.

40-3670

Clay rocks of the Russkaya platform. (Glinistye porody Russkoi platformy), Lysenko, M.P., Moscow, Nedra, 1986, 254p., In Russian with English table of contents enclosed. 49 refs.

Clays, Moraines, Clay minerals, Glacial deposits, Loess, Lacustrine deposits, Marine deposits, Engineering geology, Chemical composition, Geochemistry, Soil formation.

40-3671

Blow snow at a Colorado alpine site: measurements and implications.

Berg, N.H., Arctic and alpine research, May 1986, 18(2), p.147-161, 29 refs.

Blowing snow, Snow water equivalent, Visibility, Snow mechanics, Sublimation, Wind velocity, Grain size, United States—Colorado—Niwot Ridge.

40-3672

Components of incoming radiation within a midlatitude alpine watershed during the snowmelt season.

Olyphant, G.A., Arctic and alpine research, May 1986, 18(2), p.163-169, 20 refs.

Solar radiation, Snowmelt, Watersheds, Mountains, Snow cover distribution.

40-3673

Field nodulation and acetylene reduction activity of high altitude legumes in the western United States.

Johnson, D.A., et al, Arctic and alpine research, May 1986, 18(2), p.171-179, 34 refs.

Rumbaugh, M.D.  
Vegetation, Frost action, Soil erosion, Nutrient cycle, Tundra, Growth, Mountains, Countermeasures, Meteorological factors, Cold tolerance.

40-3674

Dinitrogen fixation (acetylene reduction) in High Arctic sedge meadow communities.

Henry, G.H.R., et al, Arctic and alpine research, May 1986, 18(2), p.181-187, 37 refs.

Svoboda, J.  
Tundra, Meadow soils, Snowmelt, Nutrient cycle, Mountains, Seasonal variations, Algae, Canada—Northwest Territories—Ellesmere Island.

40-3675

Carbon dioxide evolution from subarctic peatlands in eastern Canada.

Moore, T.R., Arctic and alpine research, May 1986, 18(2), p.189-193, 22 refs.

Peat, Carbon dioxide, Vegetation, Soil chemistry, Temperature distribution, Temperature effects, Subpolar regions, Canada—Quebec—Schefferville.

40-3676

Wetland and lake evaporation in the Low Arctic.

Roulet, N.T., et al, Arctic and alpine research, May 1986, 18(2), p.195-200, 23 refs.

Woo, M.-K.  
Continuous permafrost, Evaporation, Lake water, Soil water, Heat balance, Surface roughness.

40-3677

Influence of sampling design on lichen size-frequency distributions and its effect on derived lichenometric indices.

Innes, J.L., Arctic and alpine research, May 1986, 18(2), p.201-208, 15 refs.

Lichens, Sampling, Age determination, Moraines, Statistical analysis, Distribution, Models.

40-3678

Use of percentage cover measurements in lichenometric dating.

Innes, J.L., Arctic and alpine research, May 1986, 18(2), p.209-216, 18 refs.

Lichens, Age determination, Moraines, Distribution.

40-3679

Paleoglaciology level for north-central Ellesmere Island, N.W.T., Canada.

England, J., Arctic and alpine research, May 1986, 18(2), p.217-222, 22 refs.

Glaciation, Paleoclimatology, Glacier mass balance, Ice cover, Cirque glaciers, Moraines, Altitude, Distribution, Canada—Northwest Territories—Ellesmere Island.

40-3680

Meteorology and duststorms in central Iceland.

Ashwell, I.Y., Arctic and alpine research, May 1986, 18(2), p.223-234, 20 refs.

Soil erosion, Glacial deposits, Meteorological data, Wind erosion, Iceland.

40-3681

Bacterial communities in shallow aquatic habitats of Poste-de-la-Baleine (Kuujuaupik) Region, Quebec, Canada.

Autin, A., et al, Arctic and alpine research, May 1986, 18(2), p.235-238, 10 refs.

Boisvert, J., Charpentier, G.  
Bacteria, Decomposition, Ponds, Lake water, Subpolar regions, Canada—Quebec—Poste-de-la-Baleine.

40-3682

Alpine dam project defies the elements. World construction, Mar. 1985, 38(3), p.606-67.

Cold weather construction, Dams, Concrete placing, Concrete curing, Winter concreting, Mountains.

40-3683

Determination of diffusion coefficients of self-interstitials in ice with a new method of observing climb of dislocations by X-ray topography.

Goto, K., et al, Japanese journal of applied physics, Mar. 1986, 25(3), p.351-357, 27 refs.

Hondoh, T., Higashi, A.  
Ice physics, Self diffusion, Interstitial ice, X ray analysis, Analysis (mathematics).

40-3684

Origin of the high integrated infrared intensity of the O-H stretching vibrations in ice relative to the vapor.

Whalley, E., et al, Journal of chemical physics, May 1, 1986, 84(9), p.4807-4809, 16 refs.

40-3685

Infrared radiation, Ice physics, Ions, Vibration, Molecular structure, Water vapor, Condensation.

40-3686

Test of the intrinsic nature of the shallow proton traps in ice.

Wooldridge, P.J., et al, Journal of chemical physics, Apr. 1, 1986, 84(7), p.4111-4112, 6 refs.

Devlin, J.P.  
Ice physics, Protons, Cubic ice, Infrared spectroscopy, Low temperature tests, Ions, Temperature effects, Heavy water, Defects.

40-3687

Wind tunnel simulation of atmospheric icing conditions.

Rush, C.K., et al, Meeting of the Wind Tunnel and Model Testing Panels, 7th, Ottawa, June 1955. Papers, North Atlantic Treaty Organization, AGARD (Advisory Group for Aeronautical Research and Development), 1955, p.244-259, 19 refs.

Wardlaw, R.L.  
Wind tunnels, Aircraft icing, Ice growth, Simulation, Freezing, Velocity, Supercooled clouds, Unfrozen water content, Cloud droplets.

40-3688

Regional structure and mapping of Enderby Land oases. (Landshaftnaia struktura i kartirovanie oazisov Zemli Enderbi).

Aleksandrov, M.V., Leningrad, Gidrometeoizdat, 1985, 152p., In Russian. Map enclosures. 141 refs.

Lake ice, Topographic surveys, Moraines, Cryogenic structures, Lakes, Mapping, Antarctica—Enderby Land.

The geography, orography, climate, glaciation and the physiographic zoning of Enderby Land are discussed in the first chapter of this book. Ch. 2 deals with the natural characteristics of Enderby Land Oases, considering their surface topography, their glaciers and snow beds, the soil moisture—characterized and identified as sufficient, insufficient or good—evaporation, and similarities and differences between them. Ch. 3 covers the regional mapping of the Oases according to their physical and geographic peculiarities. In the last chapter, geological aspects of 4 Oases are discussed, with classification of various components by type and group, and description of their characteristics. Detailed geological maps of the Oases Polkanova, Howard, Vechermit, and Molodezhnyi are included.

40-3689

Glacial terminations in the oxygen isotope record of deep sea cores: hypothesis of massive antarctic ice-sheet destruction.

Johnson, R.G., et al, Palaeogeography, palaeoclimatology, palaeoecology, Mar. 1986, 53(2-4), p.107-138, Refs. p.132-138.

Andrews, J.T.  
Glaciation, Floating ice, Oxygen isotopes, Ice volume, Ocean currents.

Deglaciation ice losses in Glacial Terminations I and II are estimated from oxygen isotope ratios to be much larger than evidence from the Laurentide Ice Sheet or the New Guinea coral reefs and beaches suggests. To reconcile these severely

conflicting lines of evidence, it is proposed that the rapid negative isotope ratio changes were largely caused by the disintegration of massive, floating antarctic ice-shelves which masqueraded as land ice in the oceanic isotope ratios, but which contributed no sea-level change. It is proposed that such shelves were formed when oceanic circulation changes in the North Atlantic under glacial conditions greatly reduced the formation of relatively warmer North Atlantic Deep Water and its injection into circumpolar Antarctic regions, and that the shelves disintegrated rapidly with the resumption of large scale formation of this deep water and its input into the Antarctic. It is found that high sea-levels in the 125-135 ka B.P. interval prior to Termination II (which imply very little Northern ice then) are well supported by dated coral reef stratigraphy. (Auth. mod.)

**40-3689**  
Icebreaking trials with the polar research vessel *Polarstern*. Schwarz, J., *Marine technology*, Nov. 1985, 16(4), p.131-133, With German summary and figure captions. Sea ice, Icebreakers, Ice breaking, Ice cores.

**40-3690**  
Canada's offshore technology meets the Arctic challenges. *Marine technology*, Nov. 1985, 15(4), p.133-135. Offshore structures, Equipment, Pack ice, Drilling.

**40-3691**  
Studies of the behavior of a snow cover on mountain slope. 20. Determination of stresses in the snow cover through curves (C/H) and the distribution of snow density. Yoshida, Z., *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.1-14, 6 refs., In Japanese with English summary. Snow mechanics, Snow density, Stresses, Slope orientation, Snow cover thickness, Rheology, Mountains, Analysis (mathematics).

**40-3692**  
Estimation model for the depth of a dry snow cover—based on the viscous compression theory of seasonal snow cover. Motoyama, H., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.15-25, 19 refs., In Japanese with English summary. Kojima, K. Snow depth, Snow compression, Snow water equivalent, Viscosity, Mathematical models, Snow cover, Snow accumulation, Seasonal variations.

**40-3693**  
Quick hardening of snow under a strong temperature gradient. Akitaya, E., *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.27-35, 6 refs., In Japanese with English summary. Snow hardness, Metamorphism (snow), Snow density, Temperature gradients, Wind velocity, Surface temperature, Snow surface, Analysis (mathematics).

**40-3694**  
Hardness of wet snow III—decrease in snow hardness due to water saturation and/or solar radiation. Izumi, K., *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.37-48, 5 refs., In Japanese with English summary. Snow hardness, Metamorphism (snow), Wet snow, Snow water content, Heat transfer, Unfrozen water content, Snow density, Saturation, Solar radiation.

**40-3695**  
Evaporation rate of snow at the surface of a snow cover—observations in Sapporo and Moshiri, Hokkaido. Kojima, K., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.49-62, 7 refs., In Japanese with English summary. Ishikawa, N., Motoyama, H., Yamada, Y. Snow evaporation, Snow surface, Snowdrifts, Mountains, Wind velocity, Meteorological factors.

**40-3696**  
Predictions of hourly and daily amounts of snowmelt by heat balance or bulk meteorological elements. Ishikawa, N., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.63-75, 19 refs., In Japanese with English summary. Kojima, K., Motoyama, H. Snowmelt, Heat balance, Runoff, Solar radiation, Forecasting, Diurnal variations, Snow surface, Latent heat, Air temperature, Analysis (mathematics), Meteorological factors.

**40-3697**  
Snowmelt runoff processes I. Kobayashi, D., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.77-90, 10 refs., In Japanese with English summary. Motoyama, H. Runoff, Snowmelt, Water temperature, Stream flow, Diurnal variations, Flow rate, Watersheds.

**40-3698**  
Experimental study on the generation of a snow cornice. Naitou, A., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.91-101, 11 refs., In Japanese with English summary. Kobayashi, D. Snow cornices, Snow crystal growth, Wind tunnels, Snowdrifts, Ice crystal adhesion, Wind factors, Air temperature.

**40-3699**  
Trial manufacturing of a sonde measuring liquid water contents for classified droplet sizes. Hashimoto, M., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.103-117, 6 refs., In Japanese with English summary. Cloud droplets, Unfrozen water content, Spectra, Solar radiation, Dielectric properties, Measuring instruments, Analysis (mathematics).

**40-3700**  
Short-term variation of snow particles comprising an aggregate. Fujiyoshi, Y., *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.119-130, 3 refs., In Japanese with English summary. Snowflakes, Snowfall, Snow crystal growth, Snow crystal structure, Dendritic ice.

**40-3701**  
Studies on mixed-phase snow flows. I. Definition and classification of mixed-phase snow flows. Maeno, N., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.131-137, 15 refs., In Japanese with English summary. Blowing snow, Snow mechanics, Ice crystals, Unfrozen water content, Rheology, Ice water interface, Avalanche mechanics, Snowfall, Frazil ice, Wet snow.

**40-3702**  
Studies on mixed-phase snow flows. II. Experimental apparatuses and flow structures. Nishimura, K., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.139-155, 9 refs., In Japanese with English summary. Snow mechanics, Avalanche mechanics, Snow air interface, Flow rate, Impact strength, Temperature effects.

**40-3703**  
Studies on mixed-phase snow flows. III. Interactions between snow particles and air flows. Ebinuma, T., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.157-164, 9 refs., In Japanese with English summary. Nishimura, K., Maeno, N. Snow mechanics, Snow air interface, Avalanche mechanics, Blowing snow, Flow rate, Air flow, Velocity, Spectra.

**40-3704**  
Studies on mixed-phase snow flows. IV. Stop and accumulation processes. Naruse, R., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.165-176, 13 refs., In Japanese with English summary. Nishimura, K., Maeno, N. Snow mechanics, Snow accumulation, Flow rate, Snowdrifts, Velocity, Snow density.

**40-3705**  
Strain-free preparations of thin ice samples by a chemical method. Takei, I., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.177-181, 2 refs., In Japanese with English summary. Maeno, N. Thin sections, Ice electrical properties, Ice crystals, Chemistry.

**40-3706**  
Theoretical study of frost heaving—kinetic process at a water layer between an ice lens and soil particles. Kuroda, T., *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.183-189, 10 refs., In Japanese with English summary. Frost heave, Ice lenses, Soil water migration, Thermodynamics, Water temperature, Freezing rate.

**40-3707**  
On the measurement of void in sea ice section. Oi, M., *Low temperature science (Teion kagaku)*. Series A Physical sciences, 1985, No.44, p.191-195, 3 refs., In Japanese. Sea ice, Ice structure, Bubbles, Microstructure.

**40-3708**  
Effect and disposition of TNT in a terrestrial plant. Palazzo, A.J., et al, *Journal of environmental quality*, Jan.-Mar. 1986, 15(1), MP 2098, p.49-52, 24 refs. Leggett, D.C. Soil pollution, Plant physiology, Vegetation, Military facilities, Roots, Damage, Waste disposal, Water treatment. Little is known about the response of terrestrial plants to 2,4,6-trinitrotoluene (TNT). To assess its effects, yellow nutsedge (*Cyperus esculentus* L.) was grown in hydroponic cultures containing TNT concentrations of 0, 10, and 20 mg/L. The deleterious effects of TNT were rapid and occurred at solution concentrations of 5 mg/L and higher. Root growth was most affected, followed by leaves and rhizomes. Root weights were reduced about 95% when grown in the presence of TNT. Plant yields were 54 to 74% lower than the control. The TNT and its metabolites, 4-amino-2,6-dinitrotoluene (4-ADNT), and 2-amino-4,6-dinitrotoluene (2-ADNT) were found throughout the plants. Solutions were continually monitored to ensure that no metabolites were present in solution. Since TNT was the only compound taken up, the metabolites must have formed within the plant. Levels of 4-ADNT exceeded those of 2-ADNT and TNT itself, ranging up to 2200 mg/kg in roots of plants grown in 20 mg/L of TNT. The greatest quantities of all three compounds were found in the rhizomes. Increasing solution TNT levels increased the concentrations and quantities of all three compounds in the plants.

**40-3709**  
Physical control of the horizontal patchiness of sea-ice microalgae. Gosselin, M., et al, *Marine ecology—Progress series*, Mar. 26, 1986, 29(3), p.289-298, 41 refs. Algae, Cryobiology, Sea ice, Biomass, Microbiology, Ice cover effect, Ice salinity, Snow cover effect, Photosynthesis, Hudson Bay.

**40-3710**  
Convection at a model ice edge. Calman, J., *Johns Hopkins APL. Technical digest*, 1985, 6(3), p.211-215, 7 refs. Ice melting, Ice edge, Water flow, Convection, Boundary layer, Water temperature.

**40-3711**  
Stochastic model of seasonal runoff forecasts. Krzysztofowicz, R., et al, *Water resources research*, Mar. 1986, 22(3), p.296-302, 13 refs. Watada, L.M. Runoff forecasting, Snowmelt, Mathematical models, Seasonal variations, Drainage.

**40-3712**  
Expected utility, benefit, and loss criteria for seasonal water supply planning. Krzysztofowicz, R., *Water resources research*, Mar. 1986, 22(3), p.303-312, 38 refs. Water supply, Reservoirs, Utilities, Irrigation, Seasonal variations, Mathematical models.

**40-3713**  
Optimum water supply planning based on seasonal runoff forecasts. Krzysztofowicz, R., *Water resources research*, Mar. 1986, 22(3), p.313-321, 23 refs. Runoff forecasting, Water supply, Snowmelt, Meteorological factors, Seasonal variations, Mathematical models.

**40-3714**  
Construction of the main gas-pipeline system: West Siberia—Center of the USSR. (Soozhenie sistemy gazoprovodov Zapadnaia Sibir'-Tsentra strany). Chirskov, V.G., et al, Moscow, Nedra, 1986, 303p., In Russian with Abridged English table of contents enclosed. 43 refs. Ivantsov, O.M., Krivoshein, B.L. Gas pipelines, Permafrost beneath structures, Swamps, Subarctic landscapes, Taiga.

40-3715

Allowing for ice effect when designing and operating water-accumulation plants. (Uchet ledovykh iavlenii pri proektirovani i eksploatatsii GAES). Sokolov, I.N., Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia, 1980, Vol.143, p.79-81, In Russian. 8 refs.

Ice formation, Hydraulic structures, Lakes, Electric power, Thermal regime, Ice conditions.

40-3716

Peculiarities of ice formation in reservoirs of power plant complexes. (Osobennosti protsessov ledobrazovaniia na vodokhranilishchakh energeticheskogo kompleksa).

Nikolaeva, E.I., et al, Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia, 1980, Vol.143, p.82-86, In Russian. 2 refs. Shatalina, I.N.

Lakes, Pumps, Ice formation, Electric power.

40-3717

Calculating frazil ice formation and ice edge movement in tall waters of hydroelectric power plants. (Raschet shugobrazovaniia i dvizheniia kromki ledanogo pokrova v nizhnikh b'efakh GES). Pekhov, A.I., et al, Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia, 1980, Vol.143, p.87-91, In Russian. 9 refs. Tregub, G.A.

Ice formation, Frazil ice, Ice edge, Electric power, Water temperature, Ice cover thickness, Analysis (mathematics).

40-3718

Hydraulic method of calculating first ice-cover movement on rivers in spring flood periods. (Gidravlicheskiy metod rascheta nachala pervoi podvizhki ledanogo pokrova na rekakh v period vesennego polovodiia). Genkin, Z.A., Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia, 1980, Vol.143, p.92-96, In Russian. 2 refs.

Icebound rivers, Ice forecasting, Ice breakup, Ice conditions.

40-3719

Deformation module for monocrystalline ice as a function of frequency of oscillation. (Zavisimost' modula deformatsii ot chastoty kolebani dlia monokristallicheskogo l'da).

Paniushkin, A.V., et al, Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia, 1980, Vol.143, p.97-101, In Russian. 3 refs. Aleinikov, S.M., Kytin, I.U.A., Sergacheva, N.A.

Ice deformation, Ice structure, Oscillations, Ice cover strength, Mathematical models.

40-3720

Experimental studies of pressure originating at water freezing in closed voids. (Eksperimentalnye issledovaniia davleniia vznikaiushchego pri zamerzani vody v zamknytykh polostiakh). Razgovorova, E.L., Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia, 1980, Vol.143, p.102-106, In Russian. 10 refs.

Porous materials, Water content, Frost penetration, Water films, Water pressure.

40-3721

Stratigraphy of the central part of Vavilov Glacier (Severnaya Zemlya). (Stratigrafiia tsentral'noi chasti lednika Vavilova (Severnaya Zemlia)). Korotkevich, E.S., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.5-21, In Russian. 14 refs.

Glacier ice, Thermal drills, Ice drills, Ice cores, Firn stratification, Ice structure, Ice dating.

40-3722

General mathematical model of quasi-stationary ice sheets. (Obshchaya matematicheskaya model' kvazistatsionarnogo lednikovogo pokrova). Potapenko, V.IU., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.21-26, In Russian. 2 refs. Salamatin, A.N.

Ice sheets, Mathematical models, Hydrothermal processes, Heat transfer, Mass transfer.

40-3723

Temperature distribution in the central antarctic ice sheet with paleotemperature changes at its surface. (Raspreделение temperatury v tsentral'noi chasti lednika Antarktidi pri izmenenii paleotemperatury na ego poverkhnosti). Putikov, O.F., Problemy Arktiki i Antarktiki, 1985, Vol.59, p.26-32, In Russian. 5 refs.

Ice temperature, Paleoclimatology, Ice thermal properties, Thermal conductivity, Ice creep, Antarctica—Vostok Station.

Analytic solution is presented to the problem of nonstationary temperature distribution in the central antarctic ice sheet, with

surface temperature changes, with stationary or variable vertical components of speed of ice motion.

40-3724

Analysis of effects of various factors on the movement of a stationary dome-shaped glacier (with respect to antarctic conditions). (Analiz vliianiia razlichnykh faktorov na dvizhenie statsionarnogo kupolovidnogo lednika (primeritel'no k usloviyam Antarktidi)). Barkov, N.I., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.32-39, In Russian. 11 refs.

Glacier flow, Glacier beds, Ice temperature, Glacier surfaces, Rheology.

Results of analyses of the simple mathematical models of dome-shaped glaciers are compared with some data of experimental investigations of the antarctic ice sheet. The data obtained are used, in particular, to forecast the dynamic processes of this largest glacier on Earth, and to assess the possible influence of different factors—such as a glacier's altitude profile, surface and bed features, and incline—on the motion of stationary dome-shaped glaciers in general.

40-3725

Ice thickness and flow rate in the Mirnyy Observatory area by radio echo sounding data. (Tolshchina i skorost' dvizheniia lednikovogo pokrova v raione observatorii Mirnyy po dannym radiolokatsionnogo zondirovaniia).

Sheremet'ev, A.N., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.39-45, In Russian. 1 ref.

Makeev, A.A., Strakhov, M.V., Fedorinich, L.A. Rheology, Echo sounding, Glacier flow, Glacier oscillation, Glacier thickness, Ice cover thickness, Antarctica—Denman Glacier.

Measurements of ice cover thickness and flow rate taken between Mirnyy and Pionerskaya stations during the 23rd Soviet Antarctic Expedition, Jan. 25-Mar. 12, 1978, are presented. Data show that the flow rate varies from 87 to 10 m p/y. Denman Glacier's vertical profile was plotted from barometric surface levelling and ice cover thickness measurements taken over a route of 125 km. The ice thickness, as shown in a table, varies between 1,470 and 3,200 m.

40-3726

Radiation characteristics of the snow cover on Vavilov glacier (Severnaya Zemlya). (Radiatsionnye kharakteristiki snezhnogo pokrova lednika Vavilova (Severnaya Zemlia)).

Nazarov, V.D., Problemy Arktiki i Antarktiki, 1985, Vol.59, p.45-51, In Russian. 9 refs.

Glacier ice, Glacier ablation, Radiometry, Snow cover, Measuring instruments, Solar radiation.

40-3727

Penetration of solar radiation into the snow-firn layer of Vavilov glacier (Severnaya Zemlya Archipelago, October Revolution Island). (Proniknovenie solnechnoi radiatsii v snezhno-fimovuiu tolshchu na lednike Vavilova (Arhipelag Severnaia Zemlia, O-v Oktia'br'skoi revoliutsii)).

Nazarov, V.D., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.51-55, In Russian. 9 refs.

Timerev, A.A. Glacier ice, Snow cover structure, Snow cover distribution, Solar radiation, Albedo, Actinometry, Ablation, Measuring instruments.

40-3728

Morphometric characteristics of the Novolazarevskiy Ice Shelf. (Nekotorye morfometricheskie kharakteristiki shelfovogo lednika Novolazarevskogo).

Eskin, L.I., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.56-60, In Russian. 1 ref.

Boiarskii, V.I. Ice shelves, Echo sounding, Antarctica—Novolazarevskaya Station.

Determination of the emerged margins of Novolazarevskiy Ice Shelf by radio soundings is reported. The relationship is assessed between the above-water and under-water thickness of the ice shelf in the area adjacent to the Schirmacher ponds, showing a 1:5 ratio in the southern portion of the shelf, 1:3 in the central portion, and 1:6 in the northern portion.

40-3729

Morphological and structural peculiarities of the drifting ice station SP-22. (Morfologicheskie i strukturnye osobennosti ledanogo dreifuushchego ostrova SP-22).

Grishchenko, V.D., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.60-68, In Russian. 8 refs.

Simonov, I.M. Drift stations, Sea ice distribution, Icebergs, Ice shelves, Ice composition, Impurities, Ice melting, Ice surface, Ice bottom surface.

40-3730

Steady temperature distribution in Central Antarctica. (Statsionarnoe raspredelenie temperatury v tsentral'noi chasti Antarktidi).

Vostretsov, R.N., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.68-74, In Russian. 8 refs.

Ice models, Glacier heat balance, Ice thermal properties, Thermal conductivity, Antarctica—Vostok Station.

Results of calculation of theoretical temperature distribution in the central portion of the antarctic ice cover are compared with geophysical measurement data obtained at Vostok Station during the 17th, 18th, and 19th Soviet antarctic expeditions. It is found that extensive experimental studies are required in order to arrive at a definitive and unequivocal description of the thermal processes taking place in this glacier—the largest on earth.

40-3731

Criterional analysis of equations describing thermodynamic processes in ice sheets. (Kriterial'nyi analiz uravnenii opisuyaiushchikh termodinamicheskie protsessy v lednikovyykh pokrovakh).

Potapenko, V.IU., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.74-77, In Russian. 7 refs.

Salamatin, A.N. Ice sheets, Ice physics, Thermodynamics, Mathematical models, Hydrothermal processes.

40-3732

Thermal effects of coastal water on the antarctic ice barrier. (Teplovoe vozdeistvie pribrezhnykh vod na krai antarkticheskogo lednikovogo pokrova).

Dubrobin, L.I., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.78-83, In Russian. 4 refs.

Preobrazhenskaia, M.A. Sea ice distribution, Ice shelves, Ice melting.

Thermal potential values of the antarctic coastal waters are shown to fluctuate between -0.33 and 1.33°C, causing the antarctic ice barrier to recede from 4.78 to 14.33 m per year.

40-3733

Movement of crystallization front in the ice-water system. (O peremeshchenii fronta kristallizatsii v sisteme led-voda).

Potapenko, V.IU., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.83-86, In Russian. 6 refs.

Men'shov, V.N. Stefan problem, Ice water interface, Ice crystal growth, Heat transfer, Phase transformations, Ice surface, Boundary value problems.

40-3734

Snow accumulation at Molodezhnaya Station. (Snegonakoplenie v raione VPP AMTs Molodezhnaya).

Alekhin, A.N., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.86-89, In Russian. 2 refs.

Belov, V.F., Kornilov, N.A. Snow accumulation, Antarctica—Molodezhnaya Station.

Mean decadal measurements of snow accumulation along the air strip at Molodezhnaya Station in winter of 1975 did not surpass 25 cm; annual mean accumulation was 4.3 cm.

40-3735

Paleoclimatological interpretation of thermal borehole soundings down to 900 m at Vostok Station. (Paleoklimaticheskaya interpretatsiia rezul'tatov termometrii skvazhin do glubiny 900 m na stantsii Vostok).

Vostretsov, R.N., et al, Problemy Arktiki i Antarktiki, 1985, Vol.59, p.90-93, In Russian. 5 refs.

Dmitriev, D.N., Petrov, V.N., Putikov, O.F. Ice temperature, Paleoclimatology, Ice thermal properties, Thermal conductivity, Glacier flow, Antarctica—Vostok Station.

Paleoclimatological changes for the last 10-15 th y are calculated, based on the analysis of nonstationary temperature distribution in the central portion of the antarctic ice cover, with surface temperature changes, for stationary and variable vertical velocity components of ice flow.

40-3736

Estimation of the strain and stress rate of a dome-shaped glacier. (Raschet skorosti deformatsii i napriazhenii kupolovidnogo lednika).

Potapenko, V.IU., Problemy Arktiki i Antarktiki, 1985, Vol.59, p.93-96, In Russian. 5 refs.

Stress strain diagrams, Ice models, Glacier surfaces.

An approximate solution is offered to dynamic equations for a dome-shaped glacier with axial asymmetry. The analytical method by which the strain and stress rate of the glacier was obtained is described.

40-3737

**Ice temperature measurements in deep antarctic boreholes by a thermosensor in the base of the hole.** (K voprosu izmereniia temperatury i da v glubokikh skvazhinakh Antarktity vnedriayem v zabol' termodatchikom). Vostretsov, R.N., et al. *Problemy Arktiki i Antarktiki*, 1985, Vol.59, p.96-102, In Russian. 7 refs.

Dmitriev, D.N., Putikov, O.F.

**Measuring instruments, Temperature measurement, Boreholes, Ice thermal properties, Antarctica—Vostok Station.**

Theoretical and experimental evaluation is presented of the errors of ice temperature measurements by a thermo-sensor inserted into the base of a deep borehole. Results of a theoretical and experimental evaluation not only show the effectiveness of such a method, but helped improve the accuracy of measurements.

40-3738

**Relationship between antarctic ice barrier dynamics and tidal phenomena.** (Zavisimost' dinamiki kraevoi zony lednikovogo pokrova Antarktity ot prilivnykh iavlenii). Sytinskii, A.D., et al. *Problemy Arktiki i Antarktiki*, 1985, Vol.59, p.102-105, In Russian. 11 refs.

Oborina, S.F.

**Tides, Icebergs, Ice shelves, Antarctica—Mirny Station.**

From seismic exploration data on ice vibration caused by the formation of icebergs, obtained at Mirny Station, analyses are made of the influence of tidal waves on the above processes occurring at the edge of the antarctic ice barrier. Results show that the number of ice vibrations increases during syzygial tides.

40-3739

**Radio echo sounding technique for the study of antarctic ice sheet dynamics.** (Metod radiolokatsionnogo zondirovaniia v zadache issledovaniia dinamiki lednikovogo pokrova Antarktity). Sheremet'ev, A.N., *Problemy Arktiki i Antarktiki*, 1985, Vol.59, p.106-111, In Russian. 8 refs.

**Ice sheets, Rheology, Glacier flow, Echo sounding, Antarctica—Mirny Station.**

A radio echo sounding method for measuring the flow rate of the ice cover at Mirny Station is described. Instruments used are illustrated, and a chart showing the shape of the pulses returned from the bedrock is presented.

40-3740

**Optimal temperature distribution over the drilling-bit surface during drilling-melting.** (Ob optimal'nom raspredelenii temperatury na rabochel' poverkhnosti termobura pri burenii-plavlenii). Fomin, S.A., et al. *Problemy Arktiki i Antarktiki*, 1985, Vol.59, p.111-113, In Russian. 6 refs.

Chistiakov, V.K.

**Thermal drills, Ice coring drills, Ice melting, Heat transfer.**

40-3741

**Response of a marine ice sheet to changes at the grounding line.** Van der Veen, C.J., *Quaternary research*, Nov. 1985, 24(3), p.257-267, 20 refs.

**Sea level, Ice models, Ice shelves, Grounded ice, Mass balance, Shelf ice.**

A numerical model was designed to study the stability of a marine ice sheet, and used to do some basic experiments. The ice-shelf/ice-sheet interaction enters through the flow law in which the longitudinal stress is also taken into account. Instead of applying the model to some (measured) profile and showing that this is unstable (as is common practice in other studies), an attempt is made to simulate a whole cycle of growth and retreat of a marine ice sheet, although none of the model sheet is particularly sensitive to changes in environmental conditions. The question as to what might happen to the West Antarctic Ice Sheet in the near future when a climatic warming can be expected as a result of the CO<sub>2</sub> effect, seems to be open for discussion again. From the results presented in this paper one can infer that a collapse, caused by increased melting on the ice shelves, is not very likely. (Auth.)

40-3742

**Cenozoic geology of Pribaykal'e and Transbaikalia.** (Geologiya kaizozoiia Pribaykal'ia i Zabaykal'ia). Adushinov, A.A., ed. Ulan-Ude, 1985, 106p., In Russian. For selected paper see 40-3743. 23 refs.

**Permafrost origin, Glaciation, Permafrost distribution, Periglacial processes, Geocryology, Landscape types, Climatic changes.**

40-3743

**Periglacial zone and conditions for the development of permafrost in western Transbaikalia and adjacent areas.** (O periglatsial'noi zone i usloviakh vozniknoveniia, razvitiia mnogoletnei merzloty v zapadnom Zabaykal'e i soprodel'nykh s nim territoriiakh). Bazarov, D.-D.B., *Geologiya kaizozoiia Pribaykal'ia Zabaykal'ia* (Cenozoic geology in Pribaykal'e and Transbaikalia) edited by A.A. Adushinov, Ulan-Ude, 1985, p.3-15, In Russian. 23 refs.

**Permafrost origin, Permafrost distribution, Periglacial processes, Pleistocene, Geocryology, Glaciation, Landscape types, Climatic changes.**

40-3744

**Seismic microregionalization and the impact of industrial activities.** (Seismicheskoe mikroraiionirovanie i tekhnogenez). Kriger, N.I., ed. Moscow, Nauka, 1985, 102p., In Russian. For selected papers see 40-2745 and 40-3746. Refs. passim.

**Human factors, Seismic surveys, Permafrost bases, Permafrost physics, Permafrost control, Seismic velocity, Alpine landscapes, Permafrost beneath lakes, Geophysical surveys, Permafrost beneath structures.**

40-3745

**Influence of ground thawing beneath buildings and structures on the intensity of seismic oscillations.** (O vliianii chash protaivaniia pod zdaniiami i sooruzheniiami na intensivnost' seismicheskikh kolebanii gruntov). Gogelia, T.I., et al. *Seismicheskoe mikroraiionirovanie i tekhnogenez* (Seismic microregionalization and the impact of industrial activities) edited by N.I. Kriger, Moscow, Nauka, 1985, p.17-24, In Russian. 8 refs.

Tatarenko, M.A., Sharapov, V.G.

**Permafrost bases, Seismic velocity, Foundations, Permafrost beneath structures, Permafrost control, Seismology, Human factors, Permafrost physics.**

40-3746

**Engineering geological regionalization of central Mongolia in relation to the evaluation of its seismicity.** (Inzhenerno-geologicheskoe raiionirovanie tsentral'noi chasti Mongolii v sviazi s otsenoi seismichnosti territorii). Vasil'ev, V.I., *Seismicheskoe mikroraiionirovanie i tekhnogenez* (Seismic microregionalization and the impact of industrial activities) edited by N.I. Kriger, Moscow, Nauka, 1985, p.76-79, In Russian. 6 refs.

**Seismic surveys, Alpine landscapes, Permafrost distribution, Permafrost beneath lakes, Human factors, Clay soils.**

40-3747

**Numerical modeling of components of the global system "glaciers-ocean-atmosphere".** (Chislennoe modelirovanie komponentov global'noi sistemy "ledniki-ocean-atmosfera"). Sergin, V.I.A., ed. Vladivostok, 1984, 120p., In Russian. For selected papers see 40-3748 through 40-3751. Refs. passim.

Oreshko, A.P., ed.

**Glacier ice, Ice models, Sea ice, Atmospheric physics, Environment simulation.**

40-3748

**Model of sea ice with polynomial vertical temperature profile.** (Model' morskogo i da s polinomial'nym profilom temperatury po vertikalii). Chuprynin, V.I., et al. *Chislennoe modelirovanie komponentov global'noi sistemy "ledniki-ocean-atmosfera"* (Numerical modeling of components of the global system "glaciers-ocean-atmosphere") edited by V.I.A. Sergin and A.P. Oreshko, Vladivostok, 1984, p.43-50, In Russian. 5 refs.

Karpets, V.M.

**Ice temperature, Ice air interface, Ice surface, Ice water interface, Ice cover thickness, Sea ice, Heat transfer, Mathematical models.**

40-3749

**Calculation of some quasistationary characteristics of the Antarctic and Greenland glaciations.** (O raschete nekotorykh kvazistatsionnykh kharakteristik Antarkticheskogo i Grenlandskogo oledneniia). Vertel', A.V., *Chislennoe modelirovanie komponentov global'noi sistemy "ledniki-ocean-atmosfera"* (Numerical modeling of components of the global system "glaciers-ocean-atmosphere") edited by V.I.A. Sergin and A.P. Oreshko, Vladivostok, 1984, p.51-73, In Russian. 17 refs.

**Glacier ice, Ice sheets, Ice structure, Mathematical models.**

A variational problem is formulated and quasolutions are found for describing glacier dynamics, assuming that its general

state is close to stationary. Characteristics, measured on surfaces of present ice sheets of Antarctica and Greenland, are taken as initial data. Series of numerical experiments are made for a sequence of concrete rheological functions of ice.

40-3750

**Using tensor algebra in the description of glaciers as fractured media.** (O primenenii apparata tenzornoi algebry dlia opisaniia lednika kak treshchinovatoi sredy). Ivanov, A.O., *Chislennoe modelirovanie komponentov global'noi sistemy "ledniki-ocean-atmosfera"* (Numerical modeling of components of the global system "glaciers-ocean-atmosphere") edited by V.I.A. Sergin and A.P. Oreshko, Vladivostok, 1984, p.73-94, In Russian. 24 refs.

**Glacier ice, Ice cracks, Fracture zones, Mathematical models.**

40-3751

**Compiling a model of thermomechanical properties of fractured glacier ice.** (K postroeniiu modeli termomekhanicheskikh svoistv lednika s treshchinami). Ivanov, A.O., *Chislennoe modelirovanie komponentov global'noi sistemy "ledniki-ocean-atmosfera"* (Numerical modeling of components of the global system "glaciers-ocean-atmosphere") edited by V.I.A. Sergin and A.P. Oreshko, Vladivostok, 1984, p.95-110, In Russian. 8 refs.

**Glacier ice, Fracture zones, Ice thermal properties, Mathematical models.**

40-3752

**Geological observations in the Ross Glacier area, South Georgia.** Craw, D., et al. *British Antarctic Survey. Bulletin*, May 1986, No.71, p.1-10, 7 refs.

Turnbull, I.M.

**Glacial geology, Geologic structures, Fossils, South Georgia.**

Previously unmapped areas in the Ross, Hindle and Weddell glacier regions near Royal Bay, and the Heaney Glacier in the hinterland of St Andrew's Bay, were visited in the 1984-85 field season. These areas are mainly within Cumberland Bay Formation metasediments. Significant observations include: a relatively abundant account of fossil material, including *Inoceramus* and rich *Aucellina* localities; confirmation of a major fault previously postulated to follow the Ross Glacier; the presence of numerous tuff beds, and chert, adjacent to the Ross Glacier, and large and simple but commonly sheared folds around the Hindle Glacier. Chert, marble and igneous rocks were found near the Heaney Glacier in Sandebugen Formation. Metamorphic minerals imply prehnite-pumpellyite facies metamorphism in the Cumberland Bay Formation, and pumpellyite-actinolite or greenschist facies in Sandebugen Formation. (Auth.)

40-3753

**Antarctic meteorological data Vol.22. Meteorological data at the Syowa Station in 1981.** Japanese Antarctic Research Expedition, Tokyo, Japan Meteorological Agency, 1982, 260p.

**Weather observations, Air temperature, Snowfall, Wind direction, Blowing snow, Wind velocity, Humidity, Solar radiation, Antarctica—Showa Station.**

A single page gives general information used throughout the report, i.e., station name, index number, location (lat./long.), elevation, instrumentation w/installed heights above ground, standard letter notations and symbols for elements being measured and shown in the tables. Four sections follow, giving various data in tabular form: monthly and daily summaries of surface data and twice daily full synoptic observations; monthly summaries of the data from twice daily radiosonde launches, followed by the daily upper air data from the two soundings; global solar radiation data presented as monthly summaries and hourly measurements; and daily, monthly, and extreme atmospheric turbidity data.

40-3754

**Arctic and southern oceans.** (Severnyi Ledovityi i Iuzhnyi okeany). Treshnikov, A.F., ed. Leningrad, Nauka, 1985, 501p., From the "Geography of the World Ocean" series. In Russian. Refs. p.459-466.

Sal'nikov, S.S., ed.

**Sea ice, Ice.**

The three parts of this volume which concern the southern ocean consist of the following: its physiographic and biological characteristics, including peculiarities of the coasts and islands, climate, and the biological and chemical constituents of the water masses, its economic, political and geographical significance, including an estimate of the ocean resources and their allocation, the fishing industries, economic exploitation, tourism, navigation, water pollution, and the economic aspects considered region by region. Geographic and subject indexes are provided.

40-3755

Cadaster of snow avalanches of the USSR. European part of the USSR and Caucasus. (Kadast' lavin SSSR. Evropeiskaya chast' SSSR, Kavkaz), Kanacev, L.A., ed, Leningrad, Gidrometeoizdat, 1984, 208p., Pt. 1 Kola Peninsula, Pt. 3 Northern regions, Pt. 6 Ukraine, Pt. 8 Northern Caucasus, Pt. 9 Trans-Caucasus and Dagestan and Pt. 11 Ural Mountains. In Russian with abridged English table of contents enclosed. Avalanches, Alpine landscapes, Snow surveys, Mapping, Spaceborne photography.

40-3756

Design models of freezing-thawing soils. (Raschetnye modeli gruntov podverzhennykh zamorazhivaniyu i ottaivaniyu), Gorelik, L.V., et al, Leningrad. Vsesoiuznyy nauchno-issledovatel'skiy institut gidrotekhniki. Izvestiya, 1981, Vol.151, p.66-70, In Russian. 2 refs. Nuller, B.M., Shofkhet, B.A. Freeze thaw cycles, Frozen ground physics, Mathematical models, Mechanical properties.

40-3757

Calculating spatial temperature regime of an earth dam and the adjacent permeable bank. (Raschet prostirannostnogo temperaturnogo rezhima zemlianoi plotiny i fil'truishchego beregovogo primykaniya), Geras'kin, N.N., Leningrad. Vsesoiuznyy nauchno-issledovatel'skiy institut gidrotekhniki. Izvestiya, 1981, Vol.151, p.93-98, In Russian. 8 refs. Earth dams, Permafrost beneath structures, Thermal regime, Hydraulic structures, Frozen ground temperature.

40-3758

Seepage effect on thermal regime of frozen abutments of frozen and thawed earth dams. (Vliyanie fil'tratsii na temperaturny rezhim merzlykh beregovykh primykaniy gruntovykh plotin talogo i merzlogo tipov), Belan, V.I., Leningrad. Vsesoiuznyy nauchno-issledovatel'skiy institut gidrotekhniki. Izvestiya, 1981, Vol.151, p.99-104, In Russian. 10 refs. Seepage, Earth dams, Earth fills, Ground water, Thermal regime, Seasonal freeze thaw.

40-3759

Studying the brittle-failure parameters of frozen concrete. (Issledovanie parametrov khrupkogo razrusheniya zamorozhennogo betona), Pak, A.P., et al, Leningrad. Vsesoiuznyy nauchno-issledovatel'skiy institut gidrotekhniki. Izvestiya, 1979, Vol.134, p.66-70, In Russian. 7 refs. Trapeznikov, L.P., Sherstobitova, T.P., Iakovleva, E.N. Hydraulic structures, Concrete structures, Concrete freezing, Brittleness, Fracturing, Frost resistance, Low temperature tests.

40-3760

Evaluating the frost resistance of concrete. (K voprosu ob otsenke morozostoykosti betona), Lapuk, I.A., et al, Leningrad. Vsesoiuznyy nauchno-issledovatel'skiy institut gidrotekhniki. Izvestiya, 1979, Vol.134, p.71-76, In Russian. 4 refs. Levit, A.I., Morozova, G.V. Concrete freezing, Frost resistance, Ultrasonic tests, Test equipment.

40-3761

Theory of thawing ground consolidation. (K teorii konsolidatsii ottaivaiushchikh gruntov), Gorelik, L.V., et al, Leningrad. Vsesoiuznyy nauchno-issledovatel'skiy institut gidrotekhniki. Izvestiya, 1979, Vol.134, p.119-127, In Russian. 11 refs. Tsibin, A.M. Hydraulic structures, Foundations, Thaw consolidation, Thaw depth, Mathematical models.

40-3762

Alternative versions of installing ice coolers in industrial water supply systems of thermal plants. (Varianty vklucheniya ledotericheskikh ustanovok v sistemy tekhnicheskogo vodosnabzheniya TES), Nikolaeva, E.I., et al, Leningrad. Vsesoiuznyy nauchno-issledovatel'skiy institut gidrotekhniki. Izvestiya, 1981, Vol.153, p.55-60, In Russian. Shatalina, I.N. Water supply, Electric power, Cooling systems, Ice.

40-3763

Investigation of ice and thermal regimes in basins of the Kiev pumped storage power plant. (Natsurnye issledovaniya ledovogo i termicheskogo rezhimov basseinov kievskoi GAES), Sokolov, I.N., et al, Leningrad. Vsesoiuznyy nauchno-issledovatel'skiy institut gidrotekhniki. Izvestiya, 1981, Vol.153, p.74-81, In Russian. 10 refs. Gotlib, I.A.L., Dik, P.G., Rubanik, M.N. Electric power, Reservoirs, Ice conditions.

40-3764

Thawing of the reservoir bed and the core of the state electric power plant on the Mysundza River, due to increased thermal stresses. (Ottaivanie 'ozha vodokhranilishcha i yadra plotiny GRES na r. Mysundzhe v usloviyakh povyshennoy teplovoi nagruzki), Razgovorova, E.L., et al, Leningrad. Vsesoiuznyy nauchno-issledovatel'skiy institut gidrotekhniki. Izvestiya, 1981, Vol.153, p.81-88, In Russian. 5 refs. Tregub, G.A. Reservoirs, Lakes, Water supply, Earth dams, Permafrost beneath structures, Permafrost control, Thermopiles.

40-3765

Injecting ice-shelf water and air into the deep antarctic oceans. Jacobs, S., Nature, May 15-21, 1986, 321(6067), p.196-197, 11 refs. Ice shelves, Ice water interface, Chemical composition, Sea water, Ice melting, Oxygen isotopes, Antarctica—Weddell Sea.

The supersaturation of helium isotopes (He-4) in sea water at depths near 500 m on the Weddell Sea continental shelf, attributed to melt water derived from the base of the Filchner Ice Shelf, is reported. Because noble gases have low solubility in sea water, a deep maximum is induced in a profile of He-4 against depth by dissolved air that had been trapped in the ice during its formation. The He-4 spiked melt water can be found subsequently in the bottom water that is generated in the Weddell Sea. Gas concentrations in the deep ocean may thus be directly influenced by air that has had a long residence time in the Antarctic ice sheet. This supports previous interpretations of 'iceshell water'—a water mass of potential interest to ocean ventilation and to the mass balance of the Antarctic ice sheet.

40-3766

Helium: a new tracer in antarctic oceanography. Schlosser, P., Nature, May 15-21, 1986, 321(6067), p.233-235, 14 refs. Meltwater, Sea water, Ice shelves, Ice water interface, Ice melting, Chemical composition, Antarctica—Weddell Sea.

The abyssal characteristics of the world oceans are strongly influenced by the northward propagation of Antarctic Bottom Water (AABW). An important source of AABW is Weddell Sea Bottom Water (WSBW), which is formed, in part, on the continental slope of the southern Weddell Sea. The formation of WSBW on the continental slope is related to the floating ice shelves of the southern Weddell Sea (Filchner/Ronne Ice Shelves). Western Shelf Water (WSW) is modified under the ice shelves by cooling and admixture of melt water to form Ice Shelf Water (ISW), and a substantial part of the ISW flows over the sill that separates the Filchner Depression from the Weddell Sea and participates in the formation of WSBW. The data reported here demonstrate that the water/ice interaction leads to a strong He-4-supersaturation of the ISW due to dissolution of air entrapped in the ice-shelf meltwater. The He-4-supersaturation of the ISW can be used as a tracer of this water mass and also influences the He-4 balance of the WSBW. (Auth.)

40-3767

Thermal interaction of cold storage buildings with their foundation soils. (Teplovye vzaimodeystviya zdaniy kholodil'nikov s gruntami ikh osnovaniy), Gindoiar, A.G., et al, Kholodil'naya tekhnika, 1985, No.10, p.41-46, In Russian. 6 refs. Grushko, V.I.A. Foundations, Frost heave, Cold storage, Buildings, Countermeasures, Frost penetration, Analysis (mathematics), Heat transfer, Mass transfer.

40-3768

Rod anchors for power-line supports on permafrost. (Sterzhnevye ankery dlia krepleniya opor VL sooruzhaemykh na merzlykh gruntakh), Pylaev, E.L., et al, Energeticheskoe stroitel'stvo, Oct. 1985, No.10, p.55, In Russian. Bystrykh, V.F., Pavlov, A.M. Power line supports, Foundations, Anchors, Permafrost beneath structures.

40-3769

Numerical analysis of the freezing of dams built of local materials. (Chislennyi rozv'iazok zadachi promerzaniya grebel' z mistsevykh materialiy), Liashko, I.I., et al, Akademiya nauk USSR. Dopovidi. Seriya A Fiziko-matematichni ta tekhnichni nauki, Aug. 1985, No.8, p.28-30, In Ukrainian. 6 refs. Skopets'kiy, V.V., Delneka, V.S. Hydraulic structures, Earth dams, Earth fills, Frost penetration, Unfrozen water content, Mathematical models.

40-3770

Shade adapted benthic diatoms beneath antarctic sea ice. Palmisano, A.C., et al, Journal of phycology, Dec. 1985, 21(4), p.664-667, 19 refs. Sea ice, Photosynthesis, Cryobiology, Ice cover effect, Ice water interface, Algae, Antarctica—McMurdo Sound.

A dense community of shade adapted microalgae dominated by the diatom *Thalassiosira aspera* is associated with a siliceous sponge spicule mat in McMurdo Sound. Diatoms at a depth of 20 to 30 m were found attached to spicule surfaces and in the interstitial water between spicules. Ambient irradiance was less than 0.6 micro-E/sq m/s due to light attenuation by surface snow, sea ice, ice algae, and the water column. Photosynthesis-irradiance relationships determined by the uptake of Na<sup>14</sup>HCO<sub>3</sub> revealed that benthic diatoms beneath annual sea ice were light-saturated at only 11 micro-E/sq m/s, putting them among the most shade adapted microalgae reported. Unlike most shade adapted microalgae, however, they were not photoinhibited even at irradiances of 300 micro-E/sq m/s. Although in situ primary production by benthic diatoms was low, it may provide a source of fixed carbon to the abundant benthic invertebrates when phytoplankton or ice algal carbon is unavailable. (Auth.)

40-3771

Meteorological variation of atmospheric optical properties in an antarctic storm. Egan, W.G., et al, Applied optics, Apr. 1, 1986, 25(7), MP 2099, p.1155-1165, 56 refs. Hogan, A.W.

Remote sensing, Blowing snow, Albedo, Visibility, Aerosols, Solar radiation, Antarctica—Amundsen-Scott Station.

Ground truth inputs obtained during an antarctic storm were applied to the Dave vector atmospheric model. The spectropolarimetric properties of upwelling atmospheric radiation are quantitatively related to the number of ice crystals in the optical path. At large scattering angles (smaller angles in the plane of vision), the ice crystal scattering produces strong polarization proportional to the concentration. However, at small scattering angles, the ice crystals cause generally small polarization, permitting the generally large polarization properties of the underlying terrestrial surface to be inferred. Ice crystals, by virtue of their edges, scatter differently than spheres and may have scattering cross sections many orders of magnitude greater than an equivalent area sphere. Polarization appears to be a useful adjunct in synoptic passive atmospheric remote sensing. (Auth.)

40-3772

SNOW-TWO data report. Volume 2: System performance.

Jordan, R., ed, U.S. Army Cold Regions Research and Engineering Laboratory, June 1984, SR 84-20, 417p., ADB-101 241, Refs. passim. For Vol. 1 see 39-3031. For individual papers see 40-3773 through 40-3787. Snow physics, Military operation, Wave propagation, Transmission, Smoke generators, Light scattering, Electromagnetic properties, Snowfall, Blowing snow, Visibility, Detection, Cold weather performance, Obscuration.

The SNOW-TWO/Smoke Week VI Field Experiment held at Camp Grayling, Michigan, was a cooperative effort of the U.S. Army Cold Regions Research and Engineering Laboratory and the Office of the Project Manager Smoke/Obscurants, the main objective of which was to study the effects of manmade and natural obscuration on the performance of electro-optical and millimeter wavelength devices. This report presents the results obtained by CRREL and some 20 other agencies during the SNOW-TWO phase of the experiment, covering the periods 28 November to 21 December 1983 and 4 January to 9 March 1984. It is the fourth in a series of data reports on the SNOW field experiments sponsored by the U.S. Army Corps of Engineers Winter Battlefield Obscuration Research Program. The report is in two main volumes with a supplemental classified volume. The first volume covers the general topics of meteorology and snow characterization; the second covers the topics of electromagnetic wave transmission through falling and blowing snow, target background signatures, and system performance in snow.

- 40-3773**  
Spectral transmittance measurements at SNOW-TWO.  
Curcio, J.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.3-15, ADB-101 241, 2 refs.  
Lebow, P.  
Infrared spectroscopy, Wave propagation, Snowfall, Blowing snow, Transmission, Measuring instruments, Visibility.
- 40-3774**  
Four-wavelength LIDAR measurements from SNOW-TWO/Smoke Week VI.  
DeLateur, S.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.17-26, ADB-101 241.  
Nielsen, N.B., Uthe, E.E., Livingston, J.M.  
Snowfall, Lasers, Backscattering, Wave propagation, Optical properties, Lidar, Transmission, Snow optics, Light scattering.
- 40-3775**  
Extinction, scattering and LIDAR data.  
Mill, J.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.27-37, ADB-101 241, 2 refs.  
Davidson, G.  
Wave propagation, Snowfall, Light scattering, Lidar, Statistical analysis, Backscattering, Snow optics, Measuring instruments.
- 40-3776**  
Performance of electro-optical wavelength systems.  
Black, B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.39-119, ADB-101 241, 2 refs.  
Burgess, E.  
Snow optics, Wave propagation, Snowfall, Snow electrical properties, Fog, Ice crystals, Snow cover, Rain, Freezing, Statistical analysis, Light scattering, Blowing snow, Electromagnetic properties, Transmission.
- 40-3777**  
SMART measurements at SNOW-TWO.  
Hanley, S.T., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.121-152, ADB-101 241, 1 ref.  
Bean, B.L.  
Snowfall, Blowing snow, Wave propagation, Transmission, Light scattering, Microwaves, Attenuation, Tests, Visibility.
- 40-3778**  
Low visibility infrared group (LOVIR) data report Smoke Week VI: Narrative and instrumentation specifications.  
Butterfield, J.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.153-160, ADB-101 241.  
Fields, J.G., Alliman, M.A.  
Visibility, Smoke generators, Snow cover effect, Cold weather performance, Tests.
- 40-3779**  
Millimetre wavelength radar propagation measurements at SNOW-TWO.  
Knox, J.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.161-178, ADB-101 241.  
Bauerle, D.G.  
Radar, Wave propagation, Snowfall, Blowing snow, Military operation, Snow cover effect, Attenuation, Snowstorms.
- 40-3780**  
Preliminary near-millimeter wave data report for SNOW-TWO.  
Wellman, R.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.179-219, ADB-101 241.  
Nemarch, J., Hutchins, D., Gordon, B.  
Snowfall, Radio waves, Attenuation, Backscattering, Snowstorms.
- 40-3781**  
Radar backscatter measurements at SNOW II.  
Knox, J.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.223-264, ADB-101 241.  
Bauerle, D.G.  
Wave propagation, Radar, Backscattering, Snow cover effect, Statistical analysis.
- 40-3782**  
Field sampling of snow for chemical obscuration at SNOW-TWO/Smoke Week VI.  
Cragin, J.H., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, MP 2096, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.265-270, ADB-101 241, 3 refs.  
Military operation, Smoke generators, Snow composition, Snowfall, Snow surface, Visibility, Chemical analysis, Air pollution, Tests.
- 40-3783**  
Tank thermal shielding test.  
Fink, J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.271-353, ADB-101 241, 11 refs.  
Tedeschi, M.  
Tanks (combat vehicles), Thermal properties, Infrared radiation, Thermal insulation, Cold weather operation, Tests, Design, Heating, Detection, Countermeasures.
- 40-3784**  
Helicopter snow obscuration sub-test.  
Ebersole, J.F., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, MP 2094, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.359-376, ADB-101 241.  
Military operation, Helicopters, Navigation, Blowing snow, Snow cover effect, Photography, Air cushion vehicles, Detection, Countermeasures, Tests, Obscuration.  
Three sets of helicopter-downwash-produced snow obscuration trials were conducted (two sets on 8 December 1983, one set on 17 January 1984), for a total of 30 individual trials. Both hovering and forward flight patterns were performed. In order to obtain an adequate data base which is relevant to Army scenarios, the planned flight altitudes chosen for the test were for representative flying at low-level or NOE (nap-of-earth) missions and landing. In addition, some test flight trials were directed towards information on "masking" and "unmasking" below and above terrain features or tree tops. Thus the altitudes for the test were primarily restricted to no higher than 50 feet above the surface for forward flights, and 150 feet for hovering. Flights were made perpendicular to the main transmission line of sight, or in hovering, vertical take-off and landing modes.
- 40-3785**  
Preliminary data report for the explosion sub-test of SNOW-TWO conducted in January 1984 at Camp Grayling, MI.  
Ebersole, J.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.377-395, ADB-101 241.  
Williams, R.R.  
Atmospheric attenuation, Detonation waves.
- 40-3786**  
Performance of the Rockwell pace material sensor system at the SNOW-TWO/Smoke Week VI Field experiment.  
Lamboley, W., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.397-407, ADB-101 241.  
Snowfall, Military operation, Tanks (combat vehicles), Infrared radiation, Detection, Indicating instruments, Low temperature tests, Night vision, Smoke generators.
- 40-3787**  
Snow-cover characterization: SADARM support.  
O'Brien, H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1984, SR 84-20, MP 2095, SNOW-TWO data report. Vol.2: System performance. Edited by R. Jordan, p.409-411, ADB-101 241.  
Bates, R.  
Snow optics, Snow electrical properties, Military operation, Meteorological factors, Snow cover effect, Detection, Snow density, Snow water content, Grain size, Snow depth.
- 40-3788**  
Northern sea route, 1985.  
Armstrong, T., *Polar record*, May 1986, 23(143), p.183-187.  
Ice navigation, Icebreakers, Ships.
- 40-3789**  
Potential effect of nuclear war smokefall on sea ice.  
Ledley, T.S., et al, *Climatic change*, Apr. 1986, 8(2), p.155-171, 31 refs.  
Thompson, S.L.  
Nuclear explosions, Fallout, Sea ice, Models, Ice melting.
- 40-3790**  
Transition zone reflections and permafrost analysis.  
Justice, J.A., et al, *Geophysics*, May 1986, 51(5), p.1075-1086, 30 refs.  
Zuba, C.  
Permafrost thermal properties, Seismic reflection, Acoustic measurement.
- 40-3791**  
World's deepest well.  
Kozlovskii, E.A., *Scientific American*, Dec. 1984, 251(6), p.98-104.  
Rock drilling, Geologic structures, Stratigraphy, Drill core analysis, Seismic velocity, Gases, USSR—Kola Peninsula.
- 40-3792**  
New data on the deposition of ice-bearing loess beds of northern Yakutia and Arctic habitats of the mammoth fauna.  
Tomirdiaro, S.V., et al, *Akademiia nauk SSSR. Doklady. Earth science sections*, Sep.-Oct. 1984 (Pub. Apr. 86), Vol.278, p.107-110, 9 refs. For Russian original see 39-1636.  
Loess, Pleistocene, Frozen fines, Cryogenic structures, Edoma complex, Permafrost distribution, Permafrost origin.
- 40-3793**  
Approximate numerical calculation of soil freezing depth.  
Gusev, E.M., *Soviet meteorology and hydrology*, 1985, No.6, p.79-85, Translated from *Meteorologiya i gidrologiya*. 14 refs.  
Meltwater, Soil freezing, Frost penetration, Heat transfer, Snow cover effect, Runoff, Snow depth, Snow water equivalent, Analysis (mathematics).
- 40-3794**  
Exceptional case of ice glaze deposit in crest zone of Ural Mountains.  
Podrezov, O.A., et al, *Soviet meteorology and hydrology*, 1985, No.6, p.92-94, Translated from *Meteorologiya i gidrologiya*. 16 refs.  
Naumov, A.D.  
Glaze, Hoarfrost, Ice formation, Ice accretion, Power line icing, Alpine topography, Ice cover thickness.
- 40-3795**  
Use of hydraulicking in Siberia in the winter.  
Sadlet, B.V., et al, *Hydrotechnical construction*, Aug. 1985 (Pub. Feb. 86), 19(8), p.392-394, Translated from *Gidrotekhnicheskoe stroitel'stvo*. 1 ref.  
Kozhevnikov, N.N.  
Dredging, Hydraulic fill, Hydraulic structures, Earth dams, Cold weather construction.
- 40-3796**  
Atomic icebreaker *Rossiia*. (Atomnyi ledokol "Rossiia").  
Dem'ianchenko, V., *Morskoi flot*, 1986, No.4, p.46-52, In Russian.  
Ice navigation, Icebreakers, Design.
- 40-3797**  
Condensation coarsening of aerosol particles in a cooling vapor-gas flow.  
Sugak, E.V., et al, *Journal of engineering physics*, Aug. 1985 (Pub. Feb. 86), 49(2), p.890-895, Translated from *Inzhenerno-fizicheskii zhurnal*. 21 refs.  
Isakov, V.P.  
Aerosols, Vapor transfer, Gases, Particle size distribution, Flow, Condensation, Cooling rates, Mathematical models.
- 40-3798**  
Numerical investigation of the temperature field of a dam with freezing columns.  
Kolesnikov, P.M., et al, *Journal of engineering physics*, Aug. 1985 (Pub. Feb. 86), 49(2), p.978-982, Translated from *Inzhenerno-fizicheskii zhurnal*. 7 refs.  
Protod'akonova, T.G.  
Earth dams, Earth fills, Permafrost beneath structures, Permafrost control, Artificial freezing, Analysis (mathematics), Heat transfer.

40-3799

Finite-element models for calculating the temperature fields of underground pipelines. Khomchenko, A.N., *Journal of engineering physics*, Aug. 1985 (Pub. Feb. 86), 49(2), p.998-1000. Translated from *Inzhenerno-fizicheskii zhurnal*. 5 refs. Underground pipelines, Mathematical models, Temperature variations, Heat transfer.

40-3800

Solving nonsteady heat-conduction problems for multilayer systems by the finite-difference method. Glazunov, E.M., et al, *Journal of engineering physics*, Aug. 1985 (Pub. Feb. 86), 49(2), p.1000-1004. Translated from *Inzhenerno-fizicheskii zhurnal*. 6 refs. Pikina, G.N. Concrete structures, Thermal insulation, Heat flux, Heat transfer, Mathematical models.

40-3801

Device to melt ice and snow on a roof structure. Eizenhoefer, C.E., *U.S. Patent Office. Patent*, Aug. 30, 1983, 6 col., USP-4,401,880, 15 refs. Ice melting, Snow melting, Roofs, Artificial melting, Equipment, Drainage.

40-3802

Impact guard for declutching snow thrower. Fujii, T., *U.S. Patent Office. Patent*, Sep. 6, 1983, 4 col., USP-4,402,149, 5 refs. Snow removal, Equipment, Winter maintenance, Road maintenance, Design, Impact strength.

40-3803

Runner to keep off snowplows. Schwab, K., et al, *U.S. Patent Office. Patent*, Sep. 6, 1983, 4 col., USP-4,402,627, 13 refs. Unterberger, G. Snow removal, Equipment, Winter maintenance, Pavements, Protection, Road maintenance.

40-3804

Trailer hitch snow plow. Bianc, M.P., *U.S. Patent Office. Patent*, Sep. 13, 1983, 4 col., USP-4,403,432, 17 refs. Snow removal, Equipment, Design, Road maintenance, Winter maintenance.

40-3805

Automotive corrosion by deicing salts. Baboian, R., ed, Houston, Texas, National Association of Corrosion Engineers, 1981, 426p., Refs. passim. For selected paper see 40-3806. Symposium on Corrosion by Deicing Salts, Mar. 3-7, 1980. Chemical ice prevention, Corrosion, Vehicles, Roads, Damage, Salting, Safety, Protective coatings, Environmental impact, Countermeasures.

40-3806

Corrosion of highway appurtenances due to deicing salts. Brown, M.G., Automotive corrosion by deicing salts. Edited by R. Baboian, Houston, TX, National Association of Corrosion Engineers, 1981, p.44-54, 2 refs. Bridges, Winter maintenance, Salting, Corrosion, Road maintenance, Chemical ice prevention, Pavements, Damage, Ice control, Steels.

40-3807

Foundations, basins and underground structures. Manual for designers. (Osnovaniia, fundamenty i podzemnye sooruzheniia. Spravochnik proektirovshchikay). Sorochan, E.A., ed, Moscow, Stroizdat, 1985, 479p., In Russian with abridged English table of contents enclosed. Refs. passim. Trofimev, I.U.G., ed. Piles, Manuals, Underground facilities, Caissons, Foundations, Pits (excavations), Buildings, Soil strength, Machinery, Soil stabilization, Slope stability.

40-3808

Glacial mudflows. (Selevye potoki). Stepanov, B.S., ed, Moscow, Gidrometeoizdat, 1985, 157p., In Russian. For selected papers see 40-3809 through 40-3815. Refs. passim. Elistratova, G.P., ed. Mudflows, Glacier ice, Thermokarst, Glacial hydrology, Glacial lakes, Moraines, Dams, Lake bursts, Mathematical models.

40-3809

Morphometric characteristics and classification of glacial lakes. (Morfometricheskie kharakteristiki i klassifikatsiia morennykh ozer). Keremkulov, V.A., Selevye potoki (Glacial mudflows) edited by B.S. Stepanov and G.P. Elistratova, Moscow, Gidrometeoizdat, 1985, p.36-47, In Russian. 5 refs. Thermokarst, Glacial lakes, Mudflows, Glacial hydrology, Moraines, Lake bursts, Classifications.

40-3810

Engineering and geological conditions for the formation of glacial mudflows in the Zailiyskiy Alatau. (Ob inzhenerno-geologicheskikh usloviakh formirovaniia gliatsial'nykh selei v Zailiiskom Alatau). Engel's, A.A., Selevye potoki (Glacial mudflows) edited by B.S. Stepanov and G.P. Elistratova, Moscow, Gidrometeoizdat, 1985, p.47-59, In Russian. 10 refs. Mudflows, Glacial lakes, Glacier ice, Ablation, Moraines, Thermokarst, Lake bursts.

40-3811

Model of emptying of a glacial lake through a grotto. (Model' oporozhneniia morenogo ozero cherez grot). Keremkulov, V.A., et al, Selevye potoki (Glacial mudflows) edited by B.S. Stepanov and G.P. Elistratova, Moscow, Gidrometeoizdat, 1985, p.59-70, In Russian. 7 refs. Tsukerman, I.G. Moraines, Glacial lakes, Glacial hydrology, Thermokarst, Lake bursts, Mudflows, Analysis (mathematics).

40-3812

Forecasting the burst of moraine lakes. (O prognozirovaniia proryva morennykh ozer). Keremkulov, V.A., et al, Selevye potoki (Glacial mudflows) edited by B.S. Stepanov and G.P. Elistratova, Moscow, Gidrometeoizdat, 1985, p.84-92, In Russian. 7 refs. Kirenskaia, T.L. Mudflows, Glacial lakes, Moraines, Glacial hydrology, Lake bursts, Forecasting, Engineering geology.

40-3813

Some characteristics of the glacial mudflow which passed through the Sarkand River basin. (Nekotorye kharakteristiki gliatsial'nogo selia proshedshogo v basseine r. Sarkand). Tikhomirov, I.U.P., et al, Selevye potoki (Glacial mudflows) edited by B.S. Stepanov and G.P. Elistratova, Moscow, Gidrometeoizdat, 1985, p.132-138, In Russian. Shevyratov, E.P. Moraines, Glacial lakes, Dams, Glacier ice, Ground ice.

40-3814

Engineering and geological peculiarities of the No.16 glacial lake in the Kaskelen basin. (Inzhenerno-geologicheskie osobennosti morenogo ozero No.16 v basseine r. Kaskelen). Engel's, A.A., et al, Selevye potoki (Glacial mudflows) edited by B.S. Stepanov and G.P. Elistratova, Moscow, Gidrometeoizdat, 1985, p.143-149, In Russian. 2 refs. Beletskii, A.I.A. Ice sheets, Thermokarst lakes, Moraines, Glacial lakes, Lake bursts, Dams, Mudflows.

40-3815

Ways of estimating the probability of moraine components in mudflow formation. (Puti otsenki veroiatnosti uchastiia morennykh otlozhenii v seleobrazovanii). Golubovich, V.A., Selevye potoki (Glacial mudflows) edited by B.S. Stepanov and G.P. Elistratova, Moscow, Gidrometeoizdat, 1985, p.143-149, In Russian. Mudflows, Moraines, Glacial lakes, Lake bursts.

40-3816

Automatic electric equipment for thermal treatment of concretes on construction sites. (Avtomatizatsiia elektrotermoobrabotki betona v postroichnykh usloviakh). Shushkin, V.V., et al, *Mekhanizatsiia stroitel'stva*, May 1986, No.5, p.24-25, In Russian. Miagkov, A.D., Narskikh, V.I. Winter concreting, Formwork (construction), Concrete aggregates, Reinforced concretes, Electric heating, Equipment.

40-3817

Naled countermeasures. (Bor'ba s nalediamy). Sytnik, G.P., et al, *Transportnoe stroitel'stvo*, May 1986, No.5, p.6-7, In Russian. Iakovlev, S.I.

Embankments, Permafrost beneath structures, Naleds, Railroads, Countermeasures, Concrete structures.

40-3818

New structure of culvert foundations. (Novaia konstruktsiia fundamentov vodopropusknykh trub). Romanov, A.P., et al, *Transportnoe stroitel'stvo*, May 1986, No.5, p.12-13, In Russian. Active layer, Railroad tracks, Culverts, Embankments, Foundations, Piles, Permafrost beneath structures, Baykal Amur railroad.

40-3819

Hydromechanization of western Siberia. (Gidromekhanizatsiia v Zapadnoi Sibiri). Fainshtein, T.I., *Transportnoe stroitel'stvo*, May 1986, No.5, p.20-22, In Russian. Dredging, Excavation, Hydraulic fill, Cold weather construction, Dams, Roads, Hydraulic structures.

40-3820

Applying the BAM construction experience to construction sites of the North. (Opyt BAMa—transportnym stroikam Severa). Basin, E.V., et al, *Transportnoe stroitel'stvo*, May 1986, No.5, p.30-32, In Russian. Taits, V.G., Berkut, I.A. Railroads, Permafrost beneath structures, Embankments, Construction equipment, Transportation, Machinery, Winter maintenance, Cold weather performance.

40-3821

Excavation of hard-rock quarries under severe climatic conditions. (Razrabotka skal'nykh kar'erov v surovykh klimaticheskikh usloviakh). Lukashuk, L.V., *Transportnoe stroitel'stvo*, Apr. 1986, No.4, p.8-9, In Russian. Construction materials, Excavation, Quarries, Baykal Amur railroad, Subarctic regions.

40-3822

Forgotten structures of building foundations in the BAM zone. (Zabytye konstruktii fundamentov zdaniy BAMa). Rozanov, A.S., et al, *Transportnoe stroitel'stvo*, Apr. 1986, No.4, p.32-33, In Russian. Starshinov, E.M. Foundations, Frost heave, Active layer, Prefabrication, Thermal insulation, Plates, Piles, Buildings, Concrete structures, Permafrost beneath structures.

40-3823

Engineering equipment of construction sites of transport tunnels and metros. (Inzhenernoe oborudovanie stroitel'nykh ploshchadok pri sooruzhenii transportnykh tunnelei i metropolitenov). Vlasov, S.N., et al, *Transportnoe stroitel'stvo*, Apr. 1986, No.4, p.33-34, In Russian. Golubov, V.G.

Tunnels, Railroad tracks, Excavation, Baykal Amur railroad, Construction equipment, Permafrost beneath structures.

40-3824

Determining the bearing strength of ice crossings. (Opredelenie nesushchei sposobnosti ledovykh pereprav). Afinogenov, O.P., *Transportnoe stroitel'stvo*, Apr. 1986, No.4, p.50-51, In Russian. 2 refs. River ice, Ice crossings, Icebound rivers, Ice cover thickness, Bearing strength.

40-382

Using the MI-10K helicopters for transporting and installation of portal supports for the 220 kv power lines Dem'yansk-Konda. (Kompleksnoe ispol'zovanie vertikal'nykh MI-10K dlia transportirovaniia i ustanovki portal'nykh opor VL 220 kV Dem'yansk-Kondaj). Karavaev, O.V., et al, *Energeticheskoe stroitel'stvo*, Apr. 1986, No.4, p.62-64, In Russian. 5 refs. Ovchinnikov, V.F., Patrusev, V.S. Power line supports, Construction materials, Transportation, Helicopters, Swamps, Permafrost distribution.

40-3826

Influence of flood on the productivity of flood-plain meadows. (O vlianii polovod'ia na produktivnost' turov polnyy). Shepeleva, L.F., *Ekologiya*, Mar.-Apr. 1986, No.2, p.3-8, In Russian. 19 refs. Meadow soils, Cryogenic soils, Floodplains, Plant ecology, Ecosystems, Permafrost distribution, USSR—Ob' River.

- 40-3827**  
Productivity of some phytocenoses in Vorkuta tundras. [Produktivnost' nekotorykh fitotsenozov vorkutinskiykh tundr]. Vil'chek, G.E., *Ekologiya*, Mar.-Apr. 1986, No.2, p.8-13, In Russian. 13 refs.  
Tundra, Biomass, Plant ecology, Forest tundra, Cryogenic soils, Subarctic regions, Snow cover effect.
- 40-3828**  
Influence of the methods of biological recultivation of petroleum polluted lands on soil algae in taiga. [Vliyanie sposobov biologicheskoy rekultivatsii zemel' zagriaznennykh nef'yu na pochvennuyu al'gofloru v usloviyakh taizhnoi zony]. Shitina, E.A., et al, *Ekologiya*, Mar.-Apr. 1986, No.2, p.23-30, In Russian. 16 refs.  
Shilova, I.I., Neganova, L.B., El'shina, T.A.  
Taiga, Revegetation, Cryogenic soils, Soil microbiology, Algae, Soil pollution, Petroleum products.
- 40-3829**  
Metamorphism in a subfreezing, seasonal snow cover: the role of thermal and vapor pressure conditions. Armstrong, R.L., Boulder, University of Colorado, 1985, 175p., University Microfilms order No.8528460, Ph.D. thesis. Refs. p.142-147.  
Metamorphism (snow), Snow stratigraphy, Snow crystal structure, Thermal effects, Vapor pressure, Snow air interface, Grain size, Temperature gradients, Heat transfer, Snow density, Climatic factors.
- 40-3830**  
[Proceedings]. Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986, St. John's, Memorial University of Newfoundland, [1986], 847p. (2 vols.), Refs. passim. For selected papers see 40-3831 through 40-3846.  
Offshore structures, Ice loads, Ocean bottom, Engineering, Artificial islands, Ice strength, Sea ice, Marine geology, Meetings, Ocean waves, Subsea permafrost, Ice scoring, Icebergs.
- 40-3831**  
Hibernia GBS foundation behaviour. Thompson, G.R., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.141-164, 30 refs.  
Foo, S.H.C., Matlock, H.  
Offshore structures, Ice loads, Icebergs, Foundations, Soil strength, Hydraulic structures, Drift, Ocean waves, Loads (forces), Design, Safety.
- 40-3832**  
Seismic cone penetration testing in the Beaufort Sea. Campanella, R.G., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.253-271, 3 refs.  
Robertson, P.K., Gillespie, D., Laing, N., Kurfurst, P.J.  
Ocean bottom, Soil mechanics, Soil strength, Seismic surveys, Ice conditions, Measuring instruments, Tests, Temperature variations, Beaufort Sea.
- 40-3833**  
Compressibility and stress history of Holocene sediments in the Canadian Beaufort Sea. Christian, H.A., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.275-299, 19 refs.  
Morgenstern, N.R.  
Ocean bottom, Bottom sediment, Soil compaction, Soil strength, Seasonal freeze thaw, Stresses, Paleoclimatology, Compressive properties, Marine geology, Ocean waves, Beaufort Sea.
- 40-3834**  
Physical and sedimentological properties of near-shore sediments in the southern Beaufort Sea. Hill, P.R., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.301-327, 15 refs.  
Moran, K., Kurfurst, P.J., Pullan, S.  
Bottom sediment, Ocean bottom, Soil physics, Sedimentation, Ice conditions, Geophysical surveys, Boreholes, Marine geology, Sea ice, Grain size, Acoustic measurement, Beaufort Sea.
- 40-3835**  
Geotechnical properties of Beaufort Sea clays. Crooks, J.H.A., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.329-343, 12 refs.  
Jefferies, M.G., Becker, D.E., Been, K.  
Bottom sediment, Clays, Geophysical surveys, Hydrocarbons, Stresses, Shear strength, Beaufort Sea.
- 40-3836**  
Geotechnical design for Beaufort Sea structures. Shinde, S.B., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.347-362, 11 refs.  
Crooks, J.H.A., James, D.A., Fitzpatrick, S.W.  
Ice conditions, Offshore structures, Artificial islands, Geophysical surveys, Caissons, Sands, Marine geology, Design, Shear strength, Ocean waves, Beaufort Sea.
- 40-3837**  
Performance monitoring of the Molikpaq while deployed at Tarsuit P-45. Rogers, B.T., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.363-383, 6 refs.  
Hardy, M.D., Neth, V.W., Metge, M.  
Artificial islands, Offshore structures, Offshore drilling, Ice loads, Ice conditions, Ice solid interface, Caissons, Design, Ice strength, Drift, Beaufort Sea.
- 40-3838**  
Evaluation of the dynamic response of the Koguyk berm during ice loading. Watts, B.D., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.385-407, Refs. p.405-407.  
Charlwood, R.G., Quong, W.  
Offshore structures, Ice loads, Ocean bottom, Soil mechanics, Artificial islands, Offshore drilling, Caissons, Sands, Ice conditions, Shear stress, Dynamic loads, Ocean waves, Beaufort Sea.
- 40-3839**  
Novel approach to fill material quality assessment: near real time grading of dredged sand. Goldby, H.M., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.409-427, 7 refs.  
Crooks, J.H.A., Harper, J.R., Stuckert, B.  
Offshore structures, Dredging, Sands, Foundations, Construction materials, Design, Beaufort Sea.
- 40-3840**  
Geotechnical aspects of seabed pits in the Grand Banks area. Clark, J.I., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.431-455, Refs. p.444-446.  
Landva, J., Collins, W.T., Barrie, J.V.  
Ice scoring, Impact strength, Ocean bottom, Geophysical surveys, Soil strength, Ice loads, Calving, Icebergs, Bottom topography, Shear strength, Canada—Newfoundland—Grand Banks.
- 40-3841**  
Analytical and experimental modelling of iceberg scour and pits. Clark, J.I., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.457-468, 13 refs.  
Prasad, K.S.R.  
Ice scoring, Icebergs, Bottom topography, Ocean bottom, Mathematical models.
- 40-3842**  
New system for triaxial compression testing of sea ice. Smith, T.R., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.469-484, 9 refs.  
Dorris, J.F., Masterson, D.M.  
Ice pressure, Ice deformation, Sea ice, Ice mechanics, Ice solid interface, Offshore structures, Stress strain diagrams, Compressive properties, Tests, Equipment, Ice loads.
- 40-3843**  
Behaviour of cohesionless broken ice. Gale, A.D., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.485-500, 12 refs.  
Sego, D.C., Morgenstern, N.R.  
Ice strength, Cohesion, Shear strength, Offshore structures, Compressive properties, Offshore drilling, Stresses, Beaufort Sea.
- 40-3844**  
Geotechnical analysis of deep sediment from the Canadian Beaufort Sea. Dowse, B.E.W., Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.521-539, 22 refs.  
Ocean bottom, Subsea permafrost, Bottom sediment, Soil temperature, Soil pressure, Soil strength, Marine geology, Offshore drilling, Hydrates, Permafrost distribution, Beaufort Sea.
- 40-3845**  
Development and testing of a subsea electric auger drill (SEADRILL II). Capps, J.F., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.785-801, 2 refs.  
Root, D.I.  
Offshore structures, Ocean bottom, Bottom sediment, Soil strength, Tests, Marine geology, Offshore drilling, Geophysical surveys, Equipment, Augers, Beaufort Sea, Canada—Newfoundland.
- 40-3846**  
Development of Canadian offshore electric geophysics techniques for seabottom ground mapping. Scott, W.J., et al, Canadian Conference on Marine Geotechnical Engineering, 3rd, St. John's, Newfoundland, June 1986. Proceedings, St. John's, Memorial University of Newfoundland, [1986], p.819-830, 4 refs.  
Maxwell, F.K.  
Subsea permafrost, Bottom topography, Permafrost distribution, Geophysical surveys, Mapping, Ocean bottom, Gravel, Bottom sediment, Beaufort Sea.
- 40-3847**  
Winter ice regime in the tidal estuaries of the northeastern portion of the Bay of Fundy, New Brunswick. Desplanque, C., et al, *Canadian journal of civil engineering*, Apr. 1986, 13(2), p.130-139, With French summary. 9 refs.  
Bray, D.I.  
Ice conditions, Estuaries, Ice accretion, Ice formation, Temperature effects, Tides, Engineering, Canada—New Brunswick—Bay of Fundy.
- 40-3848**  
Ice pressures and behaviour at Adams Island, winter 1983-1984. Frederking, R., et al, *Canadian journal of civil engineering*, Apr. 1986, 13(2), p.140-149, With French summary. Presented at the 1st Canadian Hydrogeological Conference, Saskatoon, Saskatchewan, May 30-31, 1985. 21 refs.  
Ice pressure, Ice cover thickness, Ice temperature, Ice salinity, Ice mechanics, Stresses, Ocean currents, Tides, Wind velocity, Wind direction, Air temperature, Canada—Northwest Territories—Adams Island.

## 40-3849

Short-term bearing capacity of annual columnar sea ice. [La capacité portante à court terme de la mer colonnaire annuelle]. Murat, J.R., et al. *Canadian journal of civil engineering*, Apr. 1986, 13(2), p.171-187. In French with English summary. Refs. p.185-187.

Tinawi, R. Ice strength, Bearing strength, Ice cracks, Ice loads, Ice temperature, Ice salinity, Ice crystal structure, Ice cover thickness, Loads (forces), Analysis (mathematics).

## 40-3850

Finite element simulation of ice crystal growth in subcooled sodium-chloride solutions.

Sullivan, J.M., Jr., et al. MP 2100, International Conference on Numerical Methods in Engineering: Theory and Applications (NUMETA 85), Swansea, Wales, Jan. 7-11, 1985. Proceedings, Vol.1. Edited by J. Middleton and G.N. Pande, Rotterdam, A.A. Balkema, 1985, p.527-532, 12 refs.

Lynch, D.R., O'Neill, K. Ice crystal growth, Solutions, Temperature effects, Freezing, Dendritic ice, Analysis (mathematics).

A finite element solution for ice-crystal growth in subcooled sodium-chloride solution is presented. The freezing process for aqueous solutions requires simultaneous solution of the heat equation in the solid and a complete transport treatment in the liquid region. The moving ice surface in the simulations is continuously tracked via deformable grids. Heat and mass are conserved exactly in the simulations. Specifying the interface temperature based on the constitutional phase diagram is inadequate due to the disparate interfacial growth kinetics for the A-axis and C-axis of the ice crystal. Herein we apply radiation type boundary conditions on the ice interface which maintain temperature close to equilibrium along a fast-growth axis, but allow subcooled conditions to prevail along a slow-growth axis. This preliminary report concentrates on problem formulation and one-dimensional verification of the method against analytic solutions.

## 40-3851

Shallow gravity flows over the Ekström Ice Shelf. Kottmeier, C., *Boundary-layer meteorology*, Apr. 1986, 35(1-2), p.1-20. Refs. p.19-20.

Ice shelves, Ice heat flux, Wind (meteorology), Meteorological charts, Boundary layer, Antarctica—Georg von Neumayer Station, Antarctica—Ekström Ice Shelf.

Wind and temperature profiles measured near Georg von Neumayer Station in Jan. and Feb. 1983 are analyzed with respect to situations of low cloud cover. In these situations, shallow inversions develop in the period of low sun elevation. The structure of these inversions in comparison with those in midlatitudes is explained by considering the heat fluxes near the ground, the influence of surface friction over different terrain roughness and for different Coriolis parameters. One effect of stabilization over the Ekström Ice Shelf is the development of shallow gravity-influenced flows. The flow dynamics are discussed by means of a scale analysis. The results show that gravity is of considerable influence; however, it will not dominate the other forces. Strictly speaking, the flow is not katabatic for the scale considered. The Froude numbers of the flow approach values similar to those of nocturnal inversions during cooling periods. Thus it seems that the modeling methods for midlatitude stable planetary boundary layers (PBLs) will be successful in planning antarctic boundary layers as well. (Auth.)

## 40-3852

Acoustic vibration of icebreaker shell plating. [Zvukovaia vibratsiia naruzhnoi obshivki ledokola]. Boroditskii, L.S., *Sudostroenie*, May 1986, No.5, p.9-11. In Russian. 3 refs.

Ice navigation, Icebreakers, Design, Construction materials, Metal ice friction, Ice loads, Impact strength.

## 40-3853

Japanese-built technical facilities for shelf development and ocean investigations. [Tekhnicheskie srecstvia osvoeniia shelf'a i issledovaniia okeana iaponskoj postroiki]. Kaminskii, V.D., *Sudostroenie*, May 1986, No.5, p.11-15. In Russian. 5 refs.

Offshore drilling, Ice loads, Ice pressure, Foundations, Icebreakers.

## 40-3854

Geology and seismicity of the BAM zone (from Baykal to Tynda). Seismogeology and seismic regionalization. [Geologiya i seismichnost' zony BAM (ot Baikala do Tyndy)]. Seismogeologiya i seismicheskoe zelonirovaniye. Solonenko, V.P., et al. Novosibirsk, Nauka, 1985, 191p., In Russian with abridged English table of contents enclosed. Refs. p.179-190.

Solonenko, V.P., ed. Mandel'baum, M.M., ed. Maps, Permafrost beneath structures, Tunnels, Earthquakes, Baykal Amur railroad, Geological surveys, Seismic surveys, Seismic velocity.

## 40-3855

Geology and seismicity of the BAM zone (from Baykal to Tynda). Engineering geology and engineering seismology. [Geologiya i seismichnost' zony BAM (ot Baikala do Tyndy)]. Inzhenernaia geologiya i inzhenernaia seismologiya. Pavlov, O.V., et al. Novosibirsk, Nauka, 1985, 192p., In Russian with abridged English table of contents enclosed. Refs. p.186-191.

Solonenko, V.P., ed. Tunnels, Earthquakes, Embankments, Slope processes, Permafrost distribution, Baykal Amur railroad, Avalanches, Frost heave, Soil suction, Permafrost hydrology, Thermokarst, Rock streams, Mudflows.

## 40-3856

On the deterioration of a grounded iceberg. Venkatesh, S., *Iceberg research*, Apr. 1986, No.12, p.3-14, 9 refs.

Icebergs Grounded ice, Ice deterioration, Ice models, Ice volume, Floating ice, Analysis (mathematics).

## 40-3857

Toward a new shape classification of antarctic icebergs.

Keys, H., *Iceberg research*, Apr. 1986, No.12, p.15-19, 10 refs.

Icebergs, Classifications, Antarctica—Ross Sea.

A shape classification table for antarctic icebergs is presented, and three basic shape categories—tabular, irregular, and rounded—are discussed. A table of comparison of nomenclature, between the shape classification developed for the Ross Sea Iceberg Project and some published systems, for icebergs of different shapes, is also given.

## 40-3858

Iceberg stress state. Diemand, D., et al. *Iceberg research*, Apr. 1986, No.12, p.20-26, 14 refs.

Lever, J.H. Icebergs, Stresses, Ice deterioration, Ice solid interface, Ice strength, Impact strength, Ice loads, Offshore structures, Ocean bottom, Mass balance, Ice physics.

## 40-3859

On the displacement of buoyant objects from the surface of an iceberg during a rolling event. *Iceberg research*, Apr. 1986, No.12, p.27.

Icebergs, Ice mechanics, Buoyancy, Stability, Drift.

## 40-3860

Snow removal, Air Force style. Hayden, T.F., III, *Public works*, July 1986, 117(7), p.42-43.

Snow removal, Aircraft landing areas, Winter maintenance, Equipment, Airports, Snowfall.

## 40-3861

Controlled chemical concepts for snow and ice removal.

Derby, D., *Public works*, July 1986, 117(7), p.48-51. Snow removal, Ice removal, Chemical ice prevention, Equipment, Salting, Cost analysis, Corrosion, Snowfall, Climatic factors, Soil composition.

## 40-3862

Efficient snow fences help you catch the drift. Hurlbut, M., *Public works*, July 1986, 117(7), p.58-60, 5 refs.

Snow fences, Snowdrifts, Snow cover distribution, Countermeasures, Snow accumulation, Wind factors, Porosity.

## 40-3863

Waterline problems can be avoided with care and testing.

Valley, D., *Public works*, July 1986, 117(7), p.61-62. Water pipelines, Cold weather performance, Cold weather tests, Design, Damage, Corrosion.

## 40-3864

Maintenance priorities—mechanic vs driver. Wyman, W.W., *Public works*, July 1986, 117(7), p.62-63.

Snow removal, Equipment, Winter maintenance.

## 40-3865

Denver gets new help in its battle against winter. Tatom, C.A., *Public works*, July 1986, 117(7), p.67.

Ice control, Winter maintenance, Warning systems, Weather forecasting.

## 40-3866

Radial tire demonstration. Liston, R.A., MP 2102, U.S. Army Survivable Tire Symposium, Carson City, NV, Nov. 4-7, 1985. Proceedings, 1985, p.281-285.

Tires, Military equipment, Military transportation, Vehicles, Trucks.

A demonstration of the use of commercially available radial tires on the Army's 5 ton dump truck is currently in progress

at Wildflecken, Germany. One construction company, Company C of the 54th Engineering Battalion, has approximately half of its trucks equipped with radial tires and half with the standard military tires. The purpose of the demonstration is to identify the improved off-road, highway, and tread wear performance of the commercial radial tire compared to the bias ply, non-directional cross country tire that has been the US Army standard tire for some forty years. Some information relative to fuel usage and rolling resistance are provided.

## 40-3867

OTC '86 proceedings. Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986, 1986, 4 vols., Refs. passim. For selected papers see 40-3868 through 40-3880.

Offshore structures, Offshore drilling, Ice loads, Ice scoring, Ice mechanics, Drift, Meetings, Impact strength, Icebergs, Design, Ice conditions.

## 40-3868

Ice-floe wave drift experiments. Harms, V.W., Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.1, 1986, p.9-20, 12 refs.

Ice floes, Drift, Ice mechanics, Ocean waves, Ice density, Ice volume, Velocity, Experimentation, Analysis (mathematics).

## 40-3869

Motion of an ice mass near a large offshore structure. Isaacson, M., de St. Q., et al. Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.1, 1986, p.21-28, 6 refs.

Offshore structures, Ice mechanics, Ice loads, Impact strength, Ocean waves, Drift, Models, Ice volume.

## 40-3870

Importance of wave driven icebergs impacting an offshore structure. Salvalaggio, M.A., et al. Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.1, 1986, p.29-38, 14 refs.

Offshore structures, Icebergs, Ice loads, Impact strength, Ice solid interface, Ocean waves, Mathematical models.

## 40-3871

Structural integrity of semisubmersibles and gravity platforms to bergy-bit/iceberg impact. Swamidas, A.S.J., et al. Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.1, 1986, p.39-49, 47 refs.

Offshore structures, Ice loads, Impact strength, Ice solid interface, Ocean waves, Mathematical models.

## 40-3872

Marginal field exploration and production in the Arctic. Potter, R.E., et al. Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.1, 1986, p.117-125, 8 refs.

Offshore structures, Offshore drilling, Ice conditions, Ice mechanics, Ice loads, Exploration, Sea ice, Petroleum industry, Seasonal variations, Countermeasures.

## 40-3873

Nonsimultaneous failure and ice loads on Arctic structures. Ashby, M.F., et al. Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.1, 1986, p.399-404, 13 refs.

Ice loads, Ice pressure, Offshore structures, Ice mechanics, Wind factor, Ice solid interface.

## 40-3874

Scale effect and compressive strength of large volumes of ice. Gershunov, E.M., Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.1, 1986, p.405-412, 33 refs.

Ice strength, Compressive properties, Ice cracks, Ice loads, Brittleness, Ice pressure, Analysis (mathematics).

## 40-3875

Analysis of ice forces on caisson-type arctic platform. Hakala, R., et al. Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.1, 1986, p.413-418, 13 refs.

Ice loads, Caissons, Offshore structures, Ice conditions, Shear strain, Models, Tests, Forecasting.

- 40-3876**  
CIDS spray ice barrier.  
Jahna, H.O., et al, Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.3, 1986, p.575-584, 17 refs.  
Petrie, D.H., Lockett, A.V.  
Ice formation, Artificial freezing, Sea spray, Spray freezing, Beaufort Sea.
- 40-3877**  
MASS: a mobil arctic structural system.  
Winkler, R.S., et al, Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.3, 1986, p.585-595, 2 refs.  
Coleman, D.M., Reusswig, G.H.  
Offshore structures, Ice conditions, Cold weather construction, Offshore drilling, Design criteria, Ice floes, Beaufort Sea.
- 40-3878**  
Structural behavior and design method of steel/concrete composite ice walls for Arctic offshore structures.  
Nojiri, Y., et al, Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.4, 1986, p.597-604, 5 refs.  
Koseki, K., Toshiaki, T., Sawayanagi, M.  
Offshore structures, Reinforced concrete, Ice formation, Design, Shear strain, Flexural strength.
- 40-3879**  
Beaufort Sea petroleum technology assessment.  
Padron, D.V., et al, Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.4, 1986, p.605-614.  
Offshore structures, Loads (forces), Ice conditions, Offshore drilling, Marine transportation, Cost analysis, Exploration, Petroleum industry, Beaufort Sea.
- 40-3880**  
Ice gouge hazard analysis.  
Lanan, G.A., et al, MP 2106, Offshore Technology Conference, 18th, Houston, Texas, May 5-8, 1986. Proceedings, Vol.4, 1986, p.57-66, 13 refs.  
Niedoroda, A.W., Weeks, W.F.  
Ice scoring, Trenching, Ocean bottom, Pipelines, Marine geology.  
Sea floor ice gouge depth distributions and pipeline trenching requirements are analyzed. An improved method is presented for parameterizing new ice gouge events based on a single record of existing sea floor ice gouges. Information on the gouge infilling process and the maximum observable gouge depth are used in this procedure.
- 40-3881**  
Glaciological research program in east Queen Maud Land, East Antarctica, Part 3, 1982.  
Nishio, F., et al, *Japanese Antarctic Research Expedition. JARE data reports*, Feb. 1986, No.110, 36p., 10 refs.  
Ohmae, H., Ishikawa, M.  
Ice sheets, Ice cover thickness, Traverses, Antarctica—Queen Maud Land.  
JARE-23, 1981-1983, initiated the field work of the East Queen Maud Land Glaciological Project. The major activities in 1982 involved shallow depth boring of ice cores at various places, and over-snow traverses along the flow line of Shirase Glacier and in the Meteorite Ice Field in the Yamato Mountains. The over-snow traverse was the biggest operation of JARE-23, with nine traverses being carried out as shown in a chart and listing. Much of the data obtained during these traverses was published in 1984. (Auth. mod.)
- 40-3882**  
Glaciological research program in east Queen Maud Land, East Antarctica, Part 4, 1984.  
Fujii, Y., et al, *Japanese Antarctic Research Expedition. JARE data reports*, 1986, No.116, 70p., 9 refs.  
Kawada, K., Yoshida, M., Matsumoto, S.  
Ice sheets, Ice cores, Ice cover thickness, Snow accumulation, Traverses, Antarctica—Mizuho Station.  
JARE-25, 1983-1985, extended the field work of the East Queen Maud Land Glaciological Project. Major activities in 1984 involved an ice core drilling of intermediate depth at Mizuho Station and an over-snow traverse into the area near 75S 35E during the 1984-85 field season. Several other trips were also made in 1984, including those commissioned to support and supply Mizuho Station. Among the data gathered during these traverses, the following are compiled in this report: position, elevation and ice thickness of the stations; net accumulation of snow measured by the stake method; and surface meteorological data. Data such as surface flow velocity, surface strain rate, and slope of the ice sheet, will be presented in other papers. The ice core drilling attained a depth of 700.6 m at Mizuho Station and *in situ* observations were made intensively on the core samples. The present paper includes data on net accumulation of snow and temperature profiles in a surface snow layer at Mizuho Station. (Auth. mod.)
- 40-3883**  
Benthic phytomicroorganisms of the Yenisey River. (Mikrofitobentos reki Enisei).  
Lavandina, D., Novosibirsk, Nauka, 1986, 286p., In Russian with an abridged English table of contents enclosed. Refs. p.241-249.  
Algae, Bibliographies, River water, Permafrost beneath rivers, Plant ecology, Plant physiology, Ecosystems.
- 40-3884**  
Performance based tire specification system for military wheeled vehicles.  
Blaisdell, G.L., MP 2101, U.S. Army Survivable Tire Symposium, Carson City, NV, Nov 4-8, 1985. Proceedings, 1985, p.277-280, 2 refs.  
Tires, Military equipment, Vehicles, Design.  
Most military wheeled vehicles continue to utilize the NDCC tire, despite its extremely low tread life and relatively poor performance. Current tire technology has far surpassed that available when the NDCC tire was designed, yet the Army continues, on all but its newest vehicles, to apply this tire. With such a disparity between the NDCC tire and what is commercially available, and with the potential now to design a tire for numerous specific performance areas, how does the Army determine what tire it should use for a particular vehicle? In answering this question, a working group was formed, and a new tire specification was developed. This system is based not on specific design features in as much as is possible, but on critical areas of tire performance. This system takes into account the vehicle's mission profile and the necessity of certain minimum levels of performance for various conditions.
- 40-3885**  
Fatigue at low temperatures.  
Symposium on Fatigue at Low Temperatures, Louisville, KY, May 10, 1993, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, 324p., Refs. passim. Some papers include discussions. For selected papers see 40-3886 through 40-3899.  
Stephens, R.I., ed.  
Low temperature tests, Fatigue (materials), Crack propagation, Metals, Fracturing, Cold weather tests, Chemical composition, Temperature effects, Metals, Steels, Aluminum.
- 40-3886**  
Midrange fatigue crack growth data correlations for structural alloys at room and cryogenic temperatures.  
Tobler, R.L., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.5-30, 59 refs.  
Cheng, Y.-W.  
Fatigue (materials), Low temperature tests, Crack propagation, Cold weather tests, Steels, Fracturing, Metals, Chemical composition, Temperature effects.
- 40-3887**  
Cyclic softening and hardening of austenitic steels at low temperatures.  
Shibata, K., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.41-46, 34 refs.  
Kishimoto, Y., Namura, N., Fujita, T.  
Fatigue (materials), Low temperature tests, Steels, Stresses, Microstructure, Cryogenics, Strains, Damage.
- 40-3888**  
Fatigue crack growth behavior in a nitrogen-strengthened high-manganese steel at cryogenic temperatures.  
Ogawa, R., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.47-59, 7 refs.  
Morris, J.W., Jr.  
Fatigue (materials), Low temperature tests, Crack propagation, Steels, Fracturing, Chemical composition.
- 40-3889**  
Effect of low temperature on apparent fatigue threshold stress intensity factors.  
Esaklul, K.A., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.63-83, 24 refs.  
Yu, W., Gerberich, W.W.  
Fatigue (materials), Low temperature tests, Crack propagation, Steels, Fracturing, Stresses, Chemical composition, Loads (forces), Temperature effects.
- 40-3890**  
Correlation of the parameters of fatigue crack growth with plastic zone size and fracture micromechanisms in vacuum and at low temperatures.  
Verkin, B.I., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.84-101, 24 refs.  
Grinberg, N.M., Serdiuk, V.A.  
Fatigue (materials), Low temperature tests, Crack propagation, Microstructure, Metals, Plastic properties, Chemical composition, Temperature effects.
- 40-3891**  
Low-temperature fatigue crack propagation in a beta-titanium alloy.  
Jata, K.V., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.102-120, 20 refs.  
Gerberich, W.W., Beevers, C.J.  
Crack propagation, Fatigue (materials), Low temperature tests, Metals, Fracturing, Chemical composition, Temperature effects.
- 40-3892**  
Fatigue crack propagation of 25Mn-5Cr-1Ni austenitic steel at low temperatures.  
Yokobori, T., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.121-139, 13 refs.  
Crack propagation, Fatigue (materials), Low temperature tests, Metals, Steels, Analysis (mathematics), Temperature effects.
- 40-3893**  
Constant-amplitude fatigue behavior of five carbon or low-alloy cast steels at room temperature and -45C.  
Stephens, R.I., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.140-160, 15 refs.  
Crack propagation, Fatigue (materials), Steels, Cold weather tests, Chemical composition, Temperature effects.
- 40-3894**  
Computerized near-threshold fatigue crack growth rate testing at cryogenic temperatures: technique and results.  
Liaw, P.K., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.173-189, 45 refs.  
Logsdon, W.A., Atar, M.H.  
Cold weather tests, Fatigue (materials), Steels, Crack propagation, Cryogenics, Stresses, Temperature effects, Computer applications.
- 40-3895**  
Effect of warm prestressing on fatigue crack growth curves at low temperatures.  
Katz, Y., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.191-209, 19 refs.  
Bussiba, A., Mathias, H.  
Fatigue (materials), Low temperature tests, Crack propagation, Stresses, Steels, Brittleness, Temperature effects, Plastic flow.
- 40-3896**  
Effect of temperature on the fatigue and fracture properties of 7475-T761 aluminum.  
Cox, J.M., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.241-256, 12 refs.  
Pettit, D.E., Langenbeck, S.L.  
Fatigue (materials), Low temperature tests, Aluminum, Crack propagation, Fracturing, Temperature effects, Metals, Damage, Loads (forces).
- 40-3897**  
Low temperature and loading frequency effects on crack growth and fracture toughness of 2024 and 7475 aluminum.  
Abelkis, P.R., et al, *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.257-273, 6 refs.  
Fatigue (materials), Low temperature tests, Crack propagation, Aluminum, Stresses, Loads (forces), Fracturing, Temperature effects.
- 40-3898**  
Fatigue crack growth behavior in mild steel weldments at low temperatures.  
Kitsunui, Y., *American Society for Testing and Materials. Special technical publication*, 1985, No.857, p.274-292, 20 refs.  
Steels, Fatigue (materials), Low temperature tests, Crack propagation, Stresses, Temperature effects, Metals, Strength.

- 40-3899**  
Variable-amplitude fatigue growth of five carbon or low alloy steels at room temperature. [Testing and Materials. Specimen, 1985, No. 857, p. 293-312, 14 refs. In Russian with English summary.]  
Steels, Fatigue (material), Temperature tests, Crack propagation, Chemical composition, Temperature effects.
- 40-3900**  
Toxic organics removal kinetics in overland flow land treatment. [Jenkins, T.F., et al, *Water research*, 1985, 19(6), MP 2111, p. 707-718, 32 refs.]  
Leggett, D.C., Parker, L.V., Oliphant, J.L.  
Waste treatment, Water treatment, Water pollution, Land reclamation, Vegetation, Experimentation, Models.  
The efficiency in removing 13 trace organics from wastewater was studied on an outdoor, prototype overland flow land treatment system. More than 94% of each substance was removed at an application rate of 0.4 cm/h (0.12 cu. m/h/m of width). The % removals declined as application rates were increased. Removal from solution was described by first-order kinetics. A model based on the two-film theory was developed using three properties of each substance (the Henry's constant, octanol-water partition coefficient and the molecular weight) and two system parameters (average water depth and residence time). The model was consistent with the known dependence of Henry's constant and diffusivity on temperature. The model was tested on an overland flow system.
- 40-3901**  
Glacial covers on planets of the solar system. [Lednikovye pokrovy na planetakh solnechnoi sistemy], Krass, M.S., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 24-29, 15 refs., In Russian with English summary.  
Extraterrestrial ice, Mars (planet), Permafrost structure, Ground ice.
- 40-3902**  
Role of compaction-settlement in glacier ice formation. [Rol' szhatiia-osedeniia v l'doobrazovanii na lednikakh], Bazhev, A.B., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 30-38, 18 refs., In Russian with English summary.  
Snow compression, Glacier alimentation, Ice formation, Glacier ice, Firn, Snow density.
- 40-3903**  
Structure of ice in the central part of the Ross Ice Shelf, Antarctica. [Stroenie tolshchi tsentral'noi chasti shel'fovogo lednika Rossa v Antarktikey], Zotikov, I.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, MP 2110, p. 39-44, 8 refs., In Russian with English summary.  
Gow, A.J., Jacobs, S.S.  
Ice shelves, Ice composition, Ice cores, Ice crystals, Impurities, Climatic changes.  
Studies of ice cores, obtained from a 416 m. deep borehole in the Ross Ice Shelf in the vicinity of the J-9 station, revealed changes in ice crystal structure, inclusions and dimensions with depth. This variation is explained by climatic fluctuations.
- 40-3904**  
Radiation properties of snow cover on polar glaciers. [Radiatsionnye kharakteristiki snezhnogo pokrova polarnykh lednikov], Aver'ianov, V.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 44-47, In Russian with English summary.  
Nazarov, V.D.  
Glacier ice, Snow cover distribution, Radiometry, Solar radiation, Albedo, Attenuation, Snow cover structure.
- 40-3905**  
Interactions of glaciers with the adjacent atmospheric layer. [Vzaimodeistvie lednika i prilednikovogo sloia atmosfery], Arapov, P.P., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 48-52, 5 refs., In Russian with English summary.  
Ice air interface, Glacier ice, Heat transfer, Wind velocity, Temperature inversions.
- 40-3906**  
Mass balance of the Abramov glacier and the possibility of its calculation from meteorological data. [Balans massy lednika Abramova i vozmozhnost' ego rascheta po meteorologicheskim pokazateliam], Kamnianskiĭ, G.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 52-59, 13 refs., In Russian with English summary.  
Kislov, B.V., Bozdrukhin, V.K.  
Glacier ice, Glacier ablation, Alimentation, Mountain glaciers, Snow cover distribution, Firn, Mass balance.
- 40-3907**  
Regime of northern Tien Shan glaciers for the last 25 years (from 1956 to 1981). [Rezhim lednikov Severnogo T'ian-Shania za 25 let (s 1956 po 1981 g.)], Makarevich, K.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 60-68, 9 refs., In Russian with English summary.  
Glacier ice, Glacier ablation, Mass balance, Mountain glaciers, Alimentation.
- 40-3908**  
Space-time variability of total glacier melting and runoff in river basins of Central Asia. [Prostranstvenno-vremennaiia izmenchivost' summarnogo toplota i stoka v basseinakh rek Tsentral'noi Azii], Kiselev, V.G., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 68-76, 3 refs., In Russian with English summary.  
Glacier ice, Glacial hydrology, River flow, Alimentation, Mountain glaciers, Seasonal variations, Glacier ablation.
- 40-3909**  
Secular fluctuations of climate and glaciers according to phyto-indications. [Vekovye kolebaniia klimata i lednikov po fitoindikatsionnym dannym], Turnamina, V.I., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 76-81, In Russian with English summary.  
Vegetation patterns, Climatic changes, Glacier oscillation, Alpine landscapes.
- 40-3910**  
Variations in mass balance components of valley glaciers in the temperate zone, exemplified by the Marukh glacier. [Izmenchivost' sostavliaiushchikh balansa massy dolinnykh lednikov umerennykh shirot na primere lednika Marukh], Menshutin, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 82-87, 9 refs., In Russian with English summary.  
Il'ichev, I.U.G.  
Glacier ice, Alimentation, Firn, Ice temperature, Glacial hydrology, Mass balance.
- 40-3911**  
Calculating statistical characteristics of runoff from mountain glacier basins. [Raschet statisticheskikh kharakteristik stoka gorno-lednikovogo basseina], Gerasimova, Z.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 87-92, 7 refs., In Russian with English summary.  
Pertsiger, F.I.  
Glacial rivers, Mountain glaciers, Glacier ablation, River basins, Glacial hydrology, Runoff.
- 40-3912**  
Conditions and regime of compound valley glaciers in Central Tien Shan. [Uslovia sushchestvovaniia i nekotorye cherty rezhima slozhno-dolinnykh lednikov Tsentral'nogo T'ian-Shania], Dikikh, A.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 93-97, 7 refs., In Russian with English summary.  
Dikikh, L.L.  
Mountain glaciers, River basins, Glacial hydrology, Glacier ice, Alimentation, Ablation, Mass balance, Snow water equivalent.
- 40-3913**  
Climate and the present state of Kamchatka glaciers. [Klimat i sostoianie lednikov Kamchatki v sovremennuiu epokhu], Vinogradov, V.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 97-103, 12 refs., In Russian with English summary.  
Murav'ev, I.A.D.  
Glacier ice, Volcanoes, Glacier oscillation, Climatic factors.
- 40-3914**  
Glacier retreat on islands of the Eurasian Arctic in the 20th century. [Sokraschenie oledeneniia na ostrovakh Evraziiskoi Arktiki v XX veke], Koriakin, V.S., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 103-108, 6 refs., In Russian with English summary.  
Glacier melting, Spaceborne photography, Glacier oscillation, Mountain glaciers.
- 40-3915**  
Distribution of moraine deposits on Central Asian glaciers under different geological conditions (cartographic analysis). [Raspredelenie morennogo pokrova na lednikakh Srednei Azii v raznykh geologicheskikh usloviakh (opyt kartograficheskogo analiza)], Kretter, A.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 108-112, 15 refs., In Russian with English summary.  
Volkova, M.V., Tikhonovskaya, A.A.  
Mountain glaciers, Glacial hydrology, Moraines.
- 40-3916**  
Behavior of the Antarctic ice shelves under climatic warming. [Nekotorye aspekty povedeniia shel'fovyykh lednikov Antarktidy pri potepnenii klimata], Kiselev, V.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 113-120, 14 refs., In Russian with English summary.  
Ice shelves, Ice cover thickness, Glacier ice, Ice volume, Ice surface, Climatic changes, Surface temperature.  
It is believed that the antarctic ice shelves are especially sensitive to climatic variations. Present increase of CO<sub>2</sub> in the atmosphere may create the "hothouse effect," a climatic warming with temperatures reaching 7-10 degrees C in continental areas, and changes in the regime and dimensions of glacial covers. Numerical modeling of the antarctic glacial shield showed that the 10 degree increase in temperature will cause an insignificant change in the volume of continental ice sheet; however, the growth or degradation of the antarctic ice cover as a whole may significantly depend on the state of shelf ice. Climatic changes, reflected in air temperature, the upper glacier surface, and the whole mass of ice, would affect rheological properties of the ice, cause its thickening or thinning, and the accumulation of sediment.
- 40-3917**  
Studies of the nature of internal radio wave reflections in a subpolar glacier. [Issledovanie prirody vnutrennykh radiovolnovykh otrazhenii v subpolarnom lednike], Macheret, I.U.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 120-130, 28 refs., In Russian with English summary.  
Mountain glaciers, Glacier ice, Radar echoes, Glacier melting.
- 40-3918**  
Mass accumulation in the alimentation area of the Medvezhiy glacier during periods between surges. [Nakoplenie massy v oblasti pitaniia lednika Medvezhego za periody mezhdu ego podvizhkami], Diurgenov, M.B., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 131-135, 3 refs., In Russian with English summary.  
Atzin, V.B., Butnitskii, A.B.  
Mountain glaciers, Glacier ice, Alimentation, Glacier surges.
- 40-3919**  
Rock varnish in the glaciated regions of Pamirs. [Kamennyi zagar v lednikovyykh rayonakh Pamira], Glazovskii, A.F., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 136-141, 11 refs., In Russian with English summary.  
Ice dating, Moraines, Mountain glaciers, Glacier ice.
- 40-3920**  
Origin of trough valleys in glaciated areas. [Genezis trogovykh dolin glatsial'nykh oblastei], Mazo, V.L., *Akademiia nauk SSSR. Institut geografii. Materialy glatsiologicheskikh issledovanih*, 1985, No. 54, p. 141-145, 12 refs., In Russian with English summary.  
Mountain glaciers, Glacial erosion, Glacier ice, Glacier flow, Models.

40-3921

Ground ice of western Siberia: origin and geocological significance. [Podzemnye l'dy Zapadnoi Sibiri: proiskhozhdenie i geokologicheskoe znachenie]. Grosval'd, M.G., et al, *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.145-152, 17 refs., In Russian with English summary.

40-3922

Fields of statistical characteristics of snow reserves over North America. [Polia statisticheskikh kharakteristik snegozapasov na territorii Severnoi Ameriki]. Ivanovskaia, T.E., et al, *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.152-164, 18 refs., In Russian with English summary.

40-3923

Regime of snow cover over Pamir-Alai. [Rezhim snezhnogo pokrova na territorii Pamiro-Alaia]. Arkhipova, O.M., *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.165-170, 8 refs., In Russian with English summary.

40-3924

Tensile properties and rupture of granular snow. [Tensiatsionnye i razryv zernistogo snega]. Volkov, V., K.F., *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.171-178, 5 refs., In Russian with English summary.

40-3925

Calculating and mapping ground ice. [Problemy ucheta i kartografirovaniia podzemnykh l'dov]. Vtiurin, B.I., *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.179-182, 10 refs., In Russian with English summary.

40-3926

Classification of ground ice in seasonally deep freezing rocks as the basis for their mapping. [Klassifikatsiia podzemnykh l'dov sezonno-kriogennykh porod kak osnova ikh kartograficheskogo obozracheniia]. Vtiurina, E.A., *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.182-188, 3 refs., In Russian with English summary.

40-3927

Origin of ground ice layers in western Siberia in relation to their mapping. [Genezis plastovykh zalezhei podzemnykh l'dov Zapadnoi Sibiri v sviazi s vosstaniem ikh kartografirovaniia]. Kritsuk, L.N., *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.188-192, 7 refs., In Russian with English summary.

40-3928

Regularities governing ice cave distribution. [Zakonomernosti rasprostraneniia peshcher so snegom]. Mavliudov, B.R., *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.193-200, 21 refs., In Russian with English summary.

40-3929

Morphology of sheet-ice deposits and the development of their outcrop called "Ledianaya Gora". [Morfologiya plastovoi zalezhi podzemnogo l'da i dinamika razvitiia obnazheniia "Ledianaya gora"]. Karpov, E.G., *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.200-204, 7 refs., In Russian with English summary.

40-3930

Distribution of radiation crusts in ice cores from the Komsomol'skaya Station well as indication of paleoclimatic conditions. [Raspredelenie radiatsionnykh korok v ledianom kerne iz skvazhiny na stantsii Komsomol'skoi kak pokazatel' paleoklimaticheskikh uslovii]. Samoilov, O.IU., et al, *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.204-208, 18 refs., In Russian with English summary.

40-3931

Two cases of retreating surface-ice layers of mountain glaciers. [Dva sluchaiia popiatnogo dvizheniia poverkhnostnykh sloev l'da gorn'nykh lednikov]. Miagkov, S.M., *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.208-210, In Russian with English summary.

40-3932

Mass balance of the Spitsbergen glaciers in the 1982/83 balance year. [Balans massy lednikov Shpitsbergena v 1982/83 balansovom godu]. Gus'kov, A.S., et al, *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.210-213, 1 ref., In Russian with English summary.

40-3933

Structure of the Tuyuksu glacier moraine from geophysical data. [Stroenie moreny lednika Tuiuksu po geofizicheskim dannym]. Tokmagambetov, G.A., et al, *Akademiia nauk SSSR. Institut geografi. Materialy glatsiologicheskikh issledovanii*, 1985, No.54, p.213-218, 3 refs., In Russian with English summary.

40-3934

Engineering-geological evaluation of loess. [Inzhenerno-geologicheskaya otsenka lessovykh porod]. Finaev, I.V., et al, Moscow, Nedra, 1985, 145p., In Russian with abridged English table of contents enclosed. 46 refs.

40-3935

Impact of human activities on high-mountain ecosystems. [Vysokogornye ekosistemy pod vozdeistviem cheloveka]. Kolomyts, E.G., ed, Moscow, Gidrometeoizdat, 1985, 156p., In Russian with abridged English table of contents enclosed. 9 refs.

40-3936

Influence of human activities on natural media from satellite observations. [Antropogennye vozdeistviia na prirodnuu srediu po nabludeniiam iz kosmosa]. Grigor'ev, A.A., Leningrad, Nauka, 1985, 239p., In Russian with abridged English table of contents enclosed. 277 refs.

40-3937

Recommendations for the design and calculation of thermoplastic pipelines. [Rekomendatsii po raschetu i proektirovaniu truboprovodov iz termoplastov]. Moscow, Strofitdat, 1985, 136p., In Russian with abridged English table of contents enclosed.

40-3938

Annual report, 1984-85. British Antarctic Survey, Cambridge, Eng., Natural Environment Research Council, 1985, 114p., Refs. p.92-103.

40-3939

Environmental impacts associated with coal development in the Kukpowruk, Nenana, and Beluga fields, Alaska. Arctic Environmental Information and Data Center, Anchorage, AK, Aug. 1980, 48p. TN805 A7 A4E5.

40-3940

Formation and bursts of moraine-dammed glacial lakes caused by glacier surges. [Obrazovanie i pro-rvy lednikovo-podprudnykh ozer pri podvikhakh pul'siruiushchego lednika]. Dolgushin, L.D., *Zhizn' Zemli*, 1982, No.17, p.40-49, In Russian. 6 refs.

40-3941

Revegetation and the initial stages of soil formation in disturbed foot-hill areas of the Polar Urals mountains. [Kharakter zarastaniia i nachal'nye stadii pochovoobrazovaniia na narushennykh ploshchadakh v predgor'iakh Poliarnogo Urala]. Liverovskaia, I.T., et al, *Zhizn' Zemli*, 1982, No.17, p.71-79, In Russian. 11 refs.

40-3942

Flora in the lower course of the Taz River. [O flore nizhnego techeniia r. Taz]. Shishkina, L.P., et al, *Zhizn' Zemli*, 1982, No.17, p.84-92, In Russian. 10 refs.

40-3943

Frosts and thaws in Kazakhstan. [Otepeli i morozy v Kazakhstane]. Skakov, A.A., Alma-Ata, Nauka, 1984, 175p., In Russian with abridged English table of contents enclosed. 151 refs.

- 40-3944**  
Climate and lakes (evaluation of the present, past and future). (Klimat i ozera (k otsenke nastoiashchego, proshlogo i budushchego)). Adamenko, V.N., Leningrad, Gidrometeoizdat, 1985, 263p., In Russian with abridged English table of contents enclosed. 155 refs.  
Tundra, Lake ice, Climatic changes, Permafrost beneath lakes, Water pollution, Meltwater, Heat balance, Lacustrine deposits, Meteorological factors, Water composition, Snow cover distribution, Snow composition, USSR—Taymyr Lake.
- 40-3945**  
Vegetational cover and natural grass lands of Tuva ASSR. (Rastitel'nyy pokrov i estestvennyye kormovye ugod'ia Tuvinskoi ASSR). Kuminova, A.V., et al., Novosibirsk, Nauka, 1985, 256p., In Russian with abridged English table of contents enclosed. Refs. p.248-254.  
Alpine tundra, Forest land, Steppes, Meadows, Vegetation patterns, Grasses, Cryogenic soils, Plant ecology, Ecosystems.
- 40-3946**  
Low-temperature oxidation; the role of vitreous oxides. Fehlner, F.P., New York, John Wiley & Sons, 1986, 257p.  
Corrosion, Low temperature tests, Corrosion, Structures, Engineering.
- 40-3947**  
[Proceedings].  
International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986, Canadian Electrical Association, [1986], var.p., Refs. passim. For individual papers see 40-3948 through 40-3991.  
Power line icing, Aircraft icing, Ship icing, Ice accretion, Snow accumulation, Ice loads, Snow loads, Meetings, Meteorological factors, Countermeasures.
- 40-3948**  
Mesoscale structure of icing storms over the Canadian East Coast and Ontario.  
Low, T.B., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 5p., (1.1). 6 refs.  
Stewart, R.E., Thompson, J.R.  
Ice storms, Icing, Precipitation (meteorology), Freezing, Snowfall, Rain, Ice forecasting, Temperature distribution.
- 40-3949**  
Ten years of standardized field ice accretion measurements in Quebec.  
Félin, B., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 6p., (1.2).  
Power line icing, Ice accretion, Ice crystal structure, Ice loads, Meteorological data, Freezing, Precipitation (meteorology), Measuring instruments, Canada—Quebec.
- 40-3950**  
Icing rates on sea-going ships.  
Zakrzewski, W.P., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 11p., (1.3). 19 refs.  
Ship icing, Ice accretion, Ice loads, Sea spray, Ice growth, Stability, Analysis (mathematics), Meteorological factors.
- 40-3951**  
Observation of sea spray icing at Green Island, British Columbia (1984-1986).  
Beal, H.T., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 14p., (1.5). 4 refs.  
Jandali, T.  
Icing, Offshore structures, Ice accretion, Sea spray, Wind velocity, Air temperature, Statistical analysis.
- 40-3952**  
Mapping of snow and ice accretion occurrences from synoptical meteorological measurements.  
Strauss, B., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 8p., (2.1).  
Power line icing, Ice accretion, Snow accumulation, Hoarfrost, Glass, Wet snow, Mapping, Synoptic meteorology, Meteorological data, Ice fog, France.
- 40-3953**  
Ice accretion data for model evaluation.  
Castonguay, G.C., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 7p., (2.2). 20 refs.  
Kolomeychuk, R.J., Welsh, L.E.  
Ice accretion, Ice models, Icing, Ice loads, Freezing, Precipitation (meteorology).
- 40-3954**  
Modelling wet snow accretion in a wind tunnel.  
Sakamoto, Y., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 5p., (2.3).  
Admiral, P., Lapeyre, J.L., Maccagnan, M.  
Snow accumulation, Wind tunnels, Wet snow, Snow density, Snow water content, Analysis (mathematics), Air temperature, Wind velocity, Precipitation (meteorology).
- 40-3955**  
Operational model for rime ice accretion.  
Finstad, K.J., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 7p., (2.4). 7 refs.  
Lozowski, E.P., Gates, E.M.  
Icing, Ice accretion, Hoarfrost, Models, Computer applications, Ship icing, Power line icing, Aircraft icing.
- 40-3956**  
Effect of conductor diameter on ice load as determined by a numerical icing model.  
Makkonen, L., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 9p., (2.5). 17 refs.  
Power line icing, Ice loads, Ice models, Ice accretion, Design criteria, Transmission lines, Freezing, Precipitation (meteorology).
- 40-3957**  
Meteorological conditions for wet snow occurrence in France, calculated and measured results in a recent case study on 5 March 1985.  
Gland, H., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 5p., (2.6). 2 refs.  
Admiral, P.  
Power line icing, Wet snow, Snowfall, Unfrozen water content, Meteorological factors, Wind velocity, Air temperature, Synoptic meteorology, France—Grenoble.
- 40-3958**  
Turbulent dispersion of the icing cloud from spray nozzles used in icing tunnels.  
Marek, J., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 8p., (2.8). 7 refs.  
Olsen, W.  
Icing, Wind tunnels, Cloud dissipation, Ice accretion, Supercooled clouds, Turbulent flow, Unfrozen water content, Computer applications, Mathematical models.
- 40-3959**  
Theoretical study of the heat balance during the growth of wet snow sleeves on electrical conductors.  
Grenier, J.C., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 4p., (3.1). 1 ref.  
Admiral, P., Maccagnan, M.  
Power line icing, Heat balance, Wet snow, Snow accumulation, Analysis (mathematics), Snow air interface, Thermodynamics, Meteorological factors, Unfrozen water content.
- 40-3960**  
Influence of several factors on the local heat transfer from an isothermal cylinder.  
Narten, R., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 8p., (3.2). 10 refs.  
Gates, E.M., Lozowski, E.P.  
Icing, Heat transfer, Surface roughness, Ice accumulation, Turbulent flow, Heat balance, Cylinders.
- 40-3961**  
Comparison of droplet size measurements by three methods.  
Stallabrass, J.R., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 7p., (3.3). 10 refs.  
Icing, Wind tunnels, Drops (liquids), Cloud droplets, Distribution, Tests.
- 40-3962**  
Microstructure and mechanical properties of ice accretions grown from supercooled water droplets containing NaCl in solution.  
Laforte, J.L., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 5p., (3.4). 12 refs.  
Lavigne, L.  
Ship icing, Offshore structures, Ice mechanics, Microstructure, Ice accretion, Supercooling, Water temperature, Drops (liquids), Solutions, Salt water.
- 40-3963**  
Quantitative results and proposed mechanisms on wet snow accretions in the Ishiuchi wind tunnel facilities.  
Admiral, P., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 6p., (3.5). 1 ref.  
Sakamoto, Y., Lapeyre, J.L., Maccagnan, M.  
Snow accumulation, Wind tunnels, Wet snow, Snow water content, Snow density, Snow water equivalent, Wind velocity, Snowfall, Experimentation, Air temperature.
- 40-3964**  
Experimental studies of ice accretion on rotating wires in an instrumented wind tunnel.  
Personne, P., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 7p., (3.6). 14 refs.  
Gayet, J.F.  
Power line icing, Ice cover thickness, Ice accretion, Air temperature, Cables (power lines), Mechanical tests, Wind tunnels, Cloud chambers, Ice growth, Wires.
- 40-3965**  
Performance requirements, design and operation of the Iowa icing wind tunnel.  
Jovic, S., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 8p., (3.7). 8 refs.  
Ettema, R., Kennedy, J.F.  
Icing, Structures, Wind tunnels, Ice accretion, Wind velocity, Tests, Ship icing, Aircraft icing, Power line icing.
- 40-3966**  
Wind tunnel study of mechanisms of sea spray icing.  
Launiainen, J., et al., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 9p., (3.8). 13 refs.  
Lyyra, M.  
Icing, Structures, Sea spray, Wind tunnels, Ice accretion, Heat transfer, Ice salinity.
- 40-3967**  
Reliable, inexpensive radio telemetry system for the transfer of meteorological and atmospheric data from mountain-top sites.  
Govoni, J.W., et al., MP 2107, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, [1986], 6p., (4.2). 6 refs.  
Rancourt, K.L., Oxtom, A.  
Power line icing, Icing, Radio communication, Telecommunication, Ice accretion, Structures, Mountains, Meteorological data, Wind velocity, Wind direction, Precipitation (meteorology), Computer applications.  
A study to examine orographic effects on atmospheric icing intensity is being conducted on two remote mountaintops in the northeastern United States. The study involves the collection and transmission of meteorological data, including wind speed and direction, precipitation, humidity, temperature, and icing rate. Remote sites are located on Loon Mountain and Cannon Mountain, both situated in the White Mountains of New Hampshire. State-of-the-art instrumentation, consisting of hot cross wire wind sensors, humidity probes, ice detectors and electronic rain gauges, is interfaced with on-site data loggers. The data are transmitted from these remote sites by a specially designed radio telemetry system, consisting of a Tucson Amateur Packet Radio Terminal Node Controller (TNC) and a Motorola radio link.

40-3968

Micro-processor controlled solid-state anemometer and ice detector.

Franklin, C.H., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 3p., (4.3).

Howe, J.B.

Icing, Ice accretion, Ice detection, Anemometers, Ice loads, Ice prevention, Measuring instruments, Wind factors, Loads (forces), Tests.

40-3969

Observations of ice/water interactions and ice formation on a model intake section in simulated cloud conditions.

Downs, S.J., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 8p., (4.4).

Ice formation, Ice water interface, Icing, Wind tunnels, Supercooled clouds, Unfrozen water content, Air flow, Tests, Ice prevention.

40-3970

Development of a composite technique in the determination of the tensile strength of impact ice.

Scavuzzo, R.J., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 6p., (4.5). 3 refs.

Chu, M.L., Lam, P.

Icing, Ice physics, Wind tunnels, Tensile properties, Strains, Impact strength, Tests, Ice loads, Models, Shear stress.

40-3971

Measurement of adhesive shear strength of impact ice in an icing wind tunnel.

Chu, M.L., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 8p., (4.6). 14 refs.

Scavuzzo, R.J., Olsen, W.V.

Icing, Wind tunnels, Ice adhesion, Ice accretion, Shear strength, Aircraft icing, Ice loads, Tests, Wind velocity, Temperature effects.

40-3972

Ice observations in Newfoundland and Labrador.

Butt, D., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 5p., (4.7). 5 refs.

Power line icing, Freezing, Ice accretion, Icing, Structures, Glaze, Hoarfrost, Transmission lines, Topographic features, Precipitation (meteorology).

40-3973

Development of a de-icing weather station which uses no heat, the Pneumatic Automatic Weather Station (PAWS).

Strangways, I., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 7p., (4.8).

Hudson, R.D.

Ice formation, Ice prevention, Albedo, Design, Weather stations.

40-3974

Application of electro-impulse de-icing (EIDI) to ice-covered structures.

Ross, R., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 9p., (4.9). 12 refs.

Zumwalt, G.W.

Aircraft icing, Structures, Ice prevention, Ice accretion, Ice removal, Power line icing, Wind tunnels, Design, Tests.

40-3975

Ice-free anemometer, laboratory and field testing.

Kuja, F., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 7p., (4.10). 1 ref.

Motychka, J.

Icing, Structures, Anemometers, Ice removal, Ice prevention, Electric heating, Wind tunnels, Tests, Freezing.

40-3976

Current ice load measurements in Norway.

Fikke, S.V., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 22p., (4.11). 3 refs.

Evensen, B.D.

Ice loads, Icing, Structures, Ice models, Meteorological factors, Measuring instruments, Weather stations, Norway.

40-3977

Compressive strength measurements on atmospheric ice.

Druez, J., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 6p., (5.1). 5 refs.

McComber, P., Lavoie, Y.

Icing, Wind tunnels, Ice strength, Compressive properties, Unfrozen water content, Tests, Ice mechanics, Glaze, Hoarfrost, Temperature effects, Wind velocity, Strains, Ice density.

40-3978

Numerical calculation of the wind force coefficients on two-dimensional iced structures.

McComber, P., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 9p., (5.2). 17 refs.

Bouchard, G.

Icing, Structures, Ice accretion, Power line icing, Wind velocity, Mathematical models.

40-3979

Growth and disappearance of ice loads on a tall mast.

Lehtonen, P., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 5p., (5.3). 8 refs.

Ahti, K., Makkonen, L.

Ice loads, Ice growth, Structures, Ice removal, Ice melting, Wind velocity, Temperature effects.

40-3980

Experimental study of aerodynamic aspects of wet snow accretion on overhead lines.

Eeles, W.T., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 3p., (5.4). 2 refs.

James, B.D., Castle, D.A.

Power line icing, Snow accretion, Wet snow, Hydrodynamics, Air flow, Tests.

40-3981

Interaction of ice and wind loading on guyed towers.

Davenport, A.G., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 5p., (5.5). 5 refs.

Icing, Ice loads, Towers, Air flow, Wind pressure, Analysis (mathematics).

40-3982

Collection and reproduction of natural ice shapes on overhead line conductors and measurement of their aerodynamic characteristics.

Koutselos, L.T., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 9p., 13 refs.

Tunstall, M.J.

Power line icing, Ice accretion, Ice loads, Air flow, Ice structure, Transmission lines, Wind tunnels, Wind velocity, Tests.

40-3983

Conductor twisting resistance effects on ice build-up and ice shedding.

Govoni, J.W., et al, MP 2108, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 8p. + figs., (5.8). 5 refs.

Ackley, S.F.

Icing, Ice removal, Cables (power lines), Ice breaking, Wind velocity, Experimentation.

Two wires of similar diameter (about 1 cm) but with different twisting resistance or torsional rigidity were tested under otherwise similar environmental icing conditions at the summit of Mt. Washington. It was found that the more rotationally rigid (stiffer) wire affected both the mode of ice buildup and showed some capability of deicing itself in moderate wind conditions. The lesser ice buildup on the stiffer wire is apparently related to the suppression of dynamic twisting oscillations in the wire, oscillations which were apparent in the softer wire. The softer wire showed heavier ice buildup with the wire at the center of a cylindrical accretion. The stiffer wire showed less ice buildup on the windward side with the development of an elliptical

accretion due to semi-static rotation of the wire. Deicing of the stiffer wire apparently took place by breaking of the ice after it slowly rotated into the wind by several possible mechanisms. The increased drag on the ice as it moved into the wind creates a bending moment which apparently exceeded the failure stress of the ice near where it was attached to the wire. The ice fails and drops off the wire and the cycle then repeats itself.

40-3984

Wet snow management.

Dumas, G., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 5p., (6.1).

Sakamoto, Y.

Wet snow, Snow accumulation, Power line icing, Snow loads, Countermeasures, Hoarfrost, Glaze, Design.

40-3985

Countermeasure of icing on the transmission lines by conducting heavy current.

Yamaoka, M., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 6p., (6.2). 7 refs.

Ohtake, I., Wakahama, G.

Power line icing, Electric heating, Ice prevention, Electric fields, Countermeasures, Transmission lines.

40-3986

Prevention of wire icing by joule heating.

Personne, P., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 5p., (6.3). 9 refs.

Gayet, J.F.

Power line icing, Electric heating, Wind tunnels, Countermeasures, Tests, Models, Analysis (mathematics), Electrical resistivity.

40-3987

Study of AC and DC flashover performances of insulators during ice accretion.

Farzaneh, M., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 5p., (6.4). 8 refs.

Sugawara, N.

Icing, Ice accretion, Electrical insulation, Ice detection, Charge transfer, Cold chambers, Transmission lines, Experimentation, Wind velocity.

40-3988

Reduction of tower head dimensions through galloping controls.

Havard, D., et al, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 8p., (6.5). 9 refs.

Pon, C.J., Pohlman, J.C.

Power line icing, Power line supports, Transmission lines, Damage, Wind factors, Countermeasures.

40-3989

Prediction of combined wind and snow loads for overhead line designs using synoptic climatological data.

Ford, A.E.W., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 9p., (6.6). 7 refs.

Power line icing, Snow loads, Wind pressure, Snow accumulation, Climatic factors, Forecasting, Synoptic meteorology, Design, Snowfall, Models.

40-3990

A utility's recent experiences with devastating ice storms and a program in response.

Tymofichuk, T.E., International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 12p., (6.8). 10 refs.

Ice accretion, Ice storms, Towers, Utilities, Icing, Power line icing, Wind velocity, Damage, Countermeasures, Canada—Manitoba.

40-3991

Communication tower icing in the New England region.

Mulherin, N., et al, MP 2109, International Workshop on Atmospheric Icing of Structures, 3rd, Vancouver, B.C., May 6-8, 1986. Proceedings, Canadian Electrical Association, (1986), 7p., (6.9). 15 refs.

Ackley, S.F.

Icing, Towers, Hoarfrost, Transmission lines, Precipitation (meteorology), Damage, Cost analysis.

Rime icing and freezing precipitation are of concern to the radio and television broadcasting industry. This paper discusses the results of a study seeking to document the severity and extent of transmitter tower icing and related problems in the northeastern United States. Information was obtained via mail questionnaire and telephone interviews with eighty-five station own-

ers and engineers concerning 118 different stations. Results show that television and FM broadcasters are seriously impacted, yet AM operators are, in general, only slightly affected by expected New England icing levels. Combined annual costs for icing protection and icing related repairs averaged \$121, \$402, and \$3066 for AM, FM, and TV stations, respectively. None of the AM stations polled employ any icing protection measures, whereas all the TV stations do.

#### 40-3992

##### Measured and expected R-values of 19 building envelopes.

Flanders, S.N., *ASHRAE transactions*, 1985, 91(2B), MP 2115, p.49-57, 3 refs.  
Buildings, Thermal insulation, Heat transfer, Walls, Heat flux, Manuals, Roofs, Cold weather construction.

This paper compares *in situ* measurements of R-values  $R(e)$  with R-values obtained from handbook calculations for 19 Army buildings in Colorado, Washington, and Alaska. The R-values were measured with heat flux and temperature sensors, with data averaged and recorded for several days. The handbook calculations rely on borings in the construction, depth probes, boroscope inspection, and as-built drawings. A subjective measure of certainty about the construction reflects the quality of this information. Examination of selected study cases indicated that convection is a frequent heat transfer mechanism in fibrous insulation, in both walls and attics. Thermal bridges were also evident from the measurements. Air leakage and moisture were not significant causes of (delta)R. Measurements of R-values were found to be in good agreement with handbook values, where knowledge of the construction is good and where convection and thermal bridges are not major effects.

#### 40-3993

##### Wastewater treatment and reuse process for cold regions.

Bouzon, J.R., MP 2112, Cold Regions Environmental Engineering Conference, Fairbanks, AK, May 18-23, 1983. Edited by T. Tilsworth and D.W. Smith, [1983], p.547-557, 11 refs.

##### Waste treatment, Water treatment, Sludges, Land reclamation, Design.

#### 40-3994

Revegetation along pipeline rights-of-way in Alaska. Johnson, L., MP 2113, International Symposium on Environmental Concerns in Rights-of-Way Management, 3rd, San Diego, CA, Feb. 15-18, 1982. Proceedings, State College, Mississippi State University, 1984, p.254-264, 12 refs.

##### Revegetation, Vegetation, Pipelines, Introduced plants, Grasses, United States-Alaska.

The Trans-Alaska Pipeline System for transporting crude oil from Prudhoe Bay to Valdez has recently been completed. The Alaskan Natural Gas Transportation System for transporting gas from Prudhoe Bay to the "Lower 48" is under construction. The rights-of-way of both these major pipelines traverse the arctic and subarctic climatic zones, where severe environmental conditions require specialized measures for revegetating disturbed terrain. On the oil pipeline right-of-way an aggressive grass seeding and fertilizing program was used for revegetation, while on the natural gas pipeline natural revegetation will be encouraged. These different approaches reflect different management goals and changing technologies as revegetation research progresses in the far north. This paper presents some of the implications of these methods for long-term restoration of disturbed terrestrial areas.

#### 40-3995

##### Combined icing and wind loads on a simulated power line test span.

Govoni, J.W., et al, MP 2114, International Workshop on Atmospheric Icing of Structures, Trondheim, Norway, June 19-21, 1984. Proceedings, [1984], 7p., 3 refs.

##### Ackley, S.F.

##### Power line icing, Ice loads, Ice accretion, Wind pressure, Unfrozen water content, Supercooled clouds, Wind velocity, Tests.

During the winter of 1982-83 measurements of combined icing and wind loading, along with in-cloud liquid water content and droplet size, were obtained on a simulated power line test span at the 2000-meter summit of Mt. Washington, New Hampshire. Icing loads were measured using a triaxial load cell which resolves three perpendicular force components of the wire tension. Wind speeds were obtained from a vane pitot-static tube located near one end of the test wire. Wind and gravity loading of the test span was obtained for winds up to 80 m/s. The in-line loading, a combination of wind and gravity loads, ranged up to 2300 N for ice accretions of up to 19 cm in diameter. Some indications were found that rougher time ice accretions had higher drag than glaze accretions.

#### 40-3996

##### Evaluation of Archimedeon screw tractor for ice management.

Edworthy, J., et al, *Transport Canada. Transportation Development Centre. Report*, Aug. 1982, TP 3793, TDC project No.4582/4583, 107p., Microlog 83-2444, With French summary. 3 refs.

##### Chabot, L., Miller, D.R.

##### Ice breaking, Amphibious vehicles, Ice navigation, Ships, Ice control.

#### 40-3997

##### Little Cornwallis Island ice cutting trials.

Gill, R.J., *Transport Canada. Transportation Development Centre. Report*, Dec. 1982, TP 4016E, TDC project No.4803, 12p., Microlog 83-2443, With French summary.

##### Ice cutting, Explosives, Icebreakers, Ice navigation, Ice breaking, Ice cover thickness, Ports, Docks, Ice conditions.

#### 40-3998

##### M.V. Arctic bow redesign study. Phase 1.

Melville Shipping Ltd., *Transport Canada. Transportation Development Centre. Report*, Jan. 1983, TP 4192E, TDC project No.4828, 40p., Microlog 84-0434, With French summary. 4 refs.

##### Ice navigation, Ice breaking, Icebreakers, Ice strength, Ice forecasting, Design, Arctic Ocean.

#### 40-3999

##### Ice control for Arctic ports and harbours. Vol.1: final report. Vol.2: annotated bibliography.

Gill, R.J., et al, *Transport Canada. Transportation Development Centre. Report*, Jan. 1983, TP 3967E, TDC project No.4524/4526, 2 vols. (360p.), Microlog 83-2426, With French summary. 83 refs. Gammaert, A.B.

##### Ice control, Ice breakup, Ice removal, Ports, Bibliographies, Countermeasures, Design, Ice booms.

#### 40-4000

##### M.V. Arctic-propulsive performance: interim report.

Dick, R.A., et al, *Transport Canada. Transportation Development Centre. Report*, Oct. 1983, TP 4930E, TDC project No.4827, 125p., Microlog 84-1778, With French summary. 9 refs.

##### Thompson, E.W., Wyld, P.I., Cheung, H.C. Ice navigation, Icebreakers, Ice breaking, Ships, Data processing.

#### 40-4001

Ice thickness data for selected Canadian stations: freeze-up 1978-break-up 1979. Environment Canada, Atmospheric Environment Service, Climatology and Applications, Ice Centre, Mar. 30, 1984, 45p., Microlog 84-3119, In English and French. 36 refs.

##### Ice conditions, Ice breakup, Ice cover thickness, Freezeup, Statistical analysis, Maps, Weather stations.

#### 40-4002

##### Development of a theoretical model of sediment dispersal by ice sheets.

Boulton, G.S., International Prospecting in Areas of Glaciated Terrain Symposium, Glasgow, Scotland, May 17-18, 1984. Prospecting in areas of glaciated terrain, 1984, London, Institute of Mining and Metallurgy, 1984, p.213-223, 9 refs.

##### Sediment transport, Ice mechanics, Ice sheets, Glacial deposits, Glacier oscillation, Soil erosion, Velocity, Minerals, Time factor, Models, Soil composition, Paleoclimatology.

#### 40-4003

##### Freeze thaw treatment of mud. [Traitement des boues à l'aide du gel-dégel].

Lewandowski, R., Symposium on Wastewater Treatment, 8th, Montreal, Nov. 19-20, 1985. Proceedings, Ottawa, Ontario, Environmental Protection Service, [1985], p.175-188, In French.

##### Waste treatment, Freeze thaw cycles, Mud, Seepage.

#### 40-4004

##### Chemical soil stabilization in construction. [Khimicheskoe zakreplenie gruntov v stroitel'stve].

Rzhantitsyn, B.A., Moscow, Stroiizdat, 1986, 264p., In Russian with abridged English table of contents enclosed. 7 refs.

##### Loess, Polymers, Soil cement, Slope stability, Soil stabilization, Resins, Cements, Silicate cements, Sands, Ground water, Clay soils, Saturation.

#### 40-4005

##### Classical solvability of Stefan nonstationary problem with convection. [Klassicheskaya razreshimost' nestatsionarnoi zadachi Stefana s konvekttsiei].

Bazalii, B.V., et al, *Akademiia nauk SSSR. Doklady*, 1986, No.1, p.20-24, In Russian. 11 refs. Degtiarev, S.P.

##### Models, Glaciation, Quaternary deposits, Oceanography, Heat transfer, Land ice, Ice accretion, Isostasy, Sea ice distribution.

#### 40-4006

Modeling Quaternary glaciations. [Modelirovanie chetvertichnykh oledeneni]. Verbitskii, M.I.A., et al, *Akademiia nauk SSSR. Doklady*, 1986, No.1, p.82-86, In Russian. 12 refs. Monin, A.S., Chalikov, D.V.

##### Paleoclimatology, Mathematical models, Pleistocene, Oceanography, Water transport, Heat transfer, Antarctica.

The thermohydrodynamic model of the glacier-ocean-atmosphere system was used, with some modifications, for studying the mechanism of climatic fluctuations in Pleistocene. Basic improvements consisted in modifying the oceanic block of the model to reflect real distribution of sea and land. The model World Ocean is presented as a totality of the Pacific, Indian and Atlantic oceans bound by the Southern Oceanic Ring, while the Atlantic Ocean communicates with the Arctic in the North. Oceans are depicted as spherical rectangles and their totality provides an adequate description of the real sea and land distribution. The heat conductivity equation (in a divergent form) is integrated with respect to each of the four regions, thus a system of four nonstationary heat conductivity equations is obtained for each ocean. Each ocean exchanges heat with the Southern Oceanic Ring, the thermal regime of which is determined from the integral heat budget equation. The model described is compared to other similar simulation models.

#### 40-4007

##### State of water in frozen water-salt solutions of polymers. [Sostoianie vody v zamorozhennykh vodno-solevnykh rastvorakh polimerov].

Mikhalev, O.I., et al, *Akademiia nauk SSSR. Doklady*, 1986, 287(2), p.385-389, In Russian. 8 refs. Kaplan, A.M., Trofimov, V.I., Tal'roze, V.L.

##### Polymers, Hygroscopic water, Brines, Molecular structure, Freezing.

#### 40-4008

##### Determination of thicknesses of loose deposits in mountain-glacier areas and on plains. [Sposob opredeleniia moshchnosti rykhlykh prirodnnykh obrazovanii v gorno-lednikovnykh i ravninnnykh oblastakh].

Kulubekov, B.A., *Akademiia nauk Kazakhskoi SSR. Izvestiia. Seriya geologicheskaiia*, 1986, No.2, p.74-78, In Russian. 6 refs.

##### Mountain glaciers, Glacier ice, Moraines, Glacial deposits, Ground ice, Thickness.

#### 40-4009

##### Physicomathematical modeling of processes of heat and moisture transfer in thawed and frozen soil.

Zaretskii, I.U.A., et al, *Soviet meteorology and hydrology*, 1985, No.7, p.66-72, Translated from *Meteorologiya i gidrologiya*. 17 refs. Lavrov, S.A.

##### Mathematical models, Frost penetration, Soil freezing, Soil water migration, Ground thawing, Heat transfer, Seepage.

#### 40-4010

##### Temperature dependence of the heat of crystallization of water.

Efimov, S.S., *Journal of engineering physics*, Oct. 1985 (Pub. Apr. 86), 49(4), p.1229-1233, Translated from *Inzhenerno-fizicheskii zhurnal*. 16 refs.

##### Supercooling, Unfrozen water content, Hygroscopic water, Freezing points.

#### 40-4011

##### Pressure flow of liquid which congeals on a pipe surface under conditions of dissipative heat release.

Maklakov, S.V., et al, *Journal of applied mechanics and technical physics*, Jul.-Aug. 1985 (Pub. Jan. 86), 26(4), p.502-508, Translated from *Zhurnal prikladnoi mekhaniki i tekhnicheskoi fiziki*. 16 refs.

##### Stollin, A.M., Khudiaeov, S.I.

##### Pipelines, Phase transformations, Fluid flow, Heat balance, Heat loss, Cooling rate.

#### 40-4012

##### Dr. Poulter's antarctic snow cruiser.

Freitag, D.R., et al, *Polar record*, May 1986, 23(143), p.129-141, 8 refs. Dibbern, J.S.

##### Motor vehicles, Snow vehicles, History.

In 1939 Dr. Thomas C. Poulter, Director of the Armour Institute, Chicago and a veteran of Byrd's second Antarctic expedition, designed and constructed a 30 ton wheeled vehicle known as the Snow Cruiser for use with the US Antarctic Service Expedition. Designed for self-contained long-distance travel, the vehicle had many new features including twin diesel engines, independent electric drive and steering on each of its four wheels, and a light aircraft carried on the roof. It was built in Chicago and tested briefly on sand dunes nearby, before being driven to Boston for shipment to Antarctica. At the Bay of Whales the vehicle quickly became bogged down in snow, and never moved farther south than the expedition's winter quarters. Modern evaluation of wheel-snow interaction suggests that the Snow Cruiser was too heavy for its tires to support it on snow surfaces. The vehicle was left behind when the expedition returned home, and has subsequently been lost. (Auth.)

40-4013

Inversion wind pattern over West Antarctica. Parish, T.R., et al, *Monthly weather review*, May 1986, 114(5), p.849-860, 43 refs.

Bromwich, D.H.

Ice sheets, Wind direction, Wind velocity, Temperature inversions, Antarctica—West Antarctica.

The surface windfield over the gently sloping interior ice fields of Antarctica is characterized by a high degree of persistence in terms of both direction and speed. The forcing of the surface wind is due primarily to the radiational cooling of the air adjacent to the sloping terrain. The representativeness of a simple diagnostic equation system in inferring the surface winds from a knowledge of terrain slope and temperature inversion structure is examined. Results suggest at least qualitatively accurate surface drainage patterns over the Antarctic continent are possible using this technique. A wintertime surface wind simulation for West Antarctica has been generated based on an accurate ice topography map. Close agreement is seen between the simulated surface windfield with field observations and satellite orientations. Implications of the simulation are discussed. (Auth.)

40-4014

Vertical winter circulation and ice accretion.

Zimnitsaia vertikal'naiia tsirkulatsiia i narastanie l'da, Zalogin, B.S., *Zhizn' Zemli*, 1981, No.16, p.61-65, In Russian. 8 refs.

Ice formation, Sea ice distribution, Ice accretion, Ice cover thickness, Ice air interface, Meteorological factors, Ice water interface, Atmospheric circulation, Heat transfer.

40-4015

Some problems in the revegetation of gully slopes. Nekotorye voprosy zarastaniia ovrazhnykh sklonov, Shishkina, L.P., *Zhizn' Zemli*, 1981, No.16, p.77-80, In Russian. 6 refs.

Gullies, Revegetation, Slope processes, Soil erosion, Thermokarst, Solifluction, Permafrost distribution.

40-4016

Soil formation in the central taiga of the Russian Plain. (Pochvoobrazovanie v srednei taige Russkoj ravniny), Nikitin, E.D., *Zhizn' Zemli*, 1981, No.16, p.80-85, In Russian.

Taiga, Podsol, Soil formation, Cryogenic soils, Forest soils, Paludification.

40-4017

Studies of soils in the western section of the BAM. (K izucheniiu pochv zapadnogo otrezka BAMa), Liverovskaia, I.T., *Zhizn' Zemli*, 1981, No.16, p.86-92, In Russian. 8 refs.

Cryogenic soils, Clay soils, Thixotropy, Peat, Soil erosion, Baykal Amur railroad, Embankments, Revegetation, Plant ecology, Permafrost beneath structures.

40-4018

Geological activities of surging glaciers from observations of the Medvezhiy Glacier in the Pamirs. (O geologicheskoi deiatel'nosti pul'siruiushchego lednika po nabludeniiam na lednike Medvezh'em (Pamir)), Dolgushin, L.D., *Zhizn' Zemli*, 1983, No.18, p.59-63, In Russian.

Mudflows, Glacier surges, Glacial lakes, Glacier oscillation, Glacial erosion, Glacial deposits, Moraines, Lake bursts, Slope processes, Mountain glaciers.

40-4019

Insufficiently studied aspects of soil formation in taiga plains. (O nedostatochno izuchennykh aspektakh taizhnogo ravninnogo pochvoobrazovaniia), Nikitin, E.D., *Zhizn' Zemli*, 1983, No.18, p.94-99, In Russian. 10 refs.

Plains, Soil profiles, Soil formation, Taiga, Podsol, Clay soils, Forest soils, Paludification, Landscape types.

40-4020

Revegetation of gully slopes in tundra. (Zarastanie ovrazhnykh sklonov v tundre), Shishkina, L.P., *Zhizn' Zemli*, 1983, No.18, p.100-103, In Russian. 3 refs.

Tundra, Soil erosion, Gullies, Revegetation, USSR—Taz Peninsula.

40-4021

Numbers and viability of bacteria in ornithogenic soils of Antarctica. Ramsay, A.J., et al, *Polar biology*, 1986, 5(4), p.195-198, 18 refs.

Stannard, R.E. Bacteria, Soil microbiology, Organic soils, Antarctica—Ross Island.

Bacteria in ornithogenic soils from Ross I. were counted by direct observation, and the percentages of viable organisms were assessed by incubation with H-3-glucose and by enumerating numbers of colony-forming units. The effects of incubation

times and temperatures, and of storage of the samples, on the uptake of H-3-glucose were determined. Direct counts showed that large total numbers of bacteria were present in samples from occupied penguin colonies and recently abandoned sites. The percentages of bacteria metabolizing H-3-glucose increased when incubation was extended from 2h to 8h at field (average 4-5°C) or laboratory (average 18.5°C) temperatures to a maximum of 22%; storage of the samples for 31 days had no significant effect. The numbers of colony-forming units were less than 0.058% of the direct counts. (Auth. mod.)

40-4022

Growth rates and salinity response of an antarctic ice microflora community.

Vargo, G.A., et al, *Polar biology*, 1986, 5(4), p.241-247, Refs. p.246-247.

Fanning, K., Heil, C., Bell, L.

Algae, Microbiology, Sea ice, Ice cover effect, Antarctica—Amery Ice Shelf.

An ice microflora community collected from the bottom of seasonal pack-ice off the Amery Ice Shelf was grown at salinities which varied from 11.5% to 34%. The response exhibited by the community and by individual species was characterized by an initial lag phase-adaptation period followed by a short period of exponential growth. Doubling rates based on changes in chlorophyll a had a range from 0.05 to 0.23/day during the time required to reach maximum chlorophyll a concentration and a range of 0.04 to 0.42/day during a period of exponential growth. Exponential growth rates of individual species ranged from 0.2 to 1.0 doublings/day. Growth occurred at all salinities above 11.5%. Community growth rates increased with increasing salinity, and the growth-salinity response of most species was shifted toward higher salinities suggesting that this antarctic ice microalgal community was adapted to the ambient salinity regime: 34%. (Auth.)

40-4023

Hydrology of land areas. Reports presented at a conference of young scientists and specialists. (Voprosy gidrologii sush. Doklady konferentsii molodykh uchenykh i spetsialistov), Popov, I.V., ed, Leningrad, Gidrometeoizdat, 1985, 219p., In Russian. For selected papers see 40-4024 through 40-4030. Refs. passim.

Kondrat'ev, S.A., ed. Peat, Ice breakup, River basins, Permafrost distribution, Swamps, Ice jams, Permafrost hydrology, Thermokarst, Snow water equivalent, Runoff, Soil water, Water table, Paludification, Snow retention, Ice-bound rivers.

40-4024

Heat and water balance of naleds during winter. (Teplovoy i vodnyi balans naledei zimoi), Delfin, B.N., *Voprosy gidrologii sush. Doklady konferentsii molodykh uchenykh i spetsialistov* (Hydrology of land areas. Reports presented at a conference of young scientists and specialists) edited by I.V. Popov and S.A. Kondrat'ev, Leningrad, Gidrometeoizdat, 1985, p.46-51, In Russian.

River ice, Mathematical models, Permafrost hydrology, Nalets, Ice (water storage), Ice formation, Microclimatology.

40-4025

Estimating the accuracy of determining average thickness of a naled. (Otsenka tochnosti opredeleniia srednei moshchnosti naledei), Kolotaev, V.N., *Voprosy gidrologii sush. Doklady konferentsii molodykh uchenykh i spetsialistov* (Hydrology of land areas. Reports presented at a conference of young scientists and specialists) edited by I.V. Popov and S.A. Kondrat'ev, Leningrad, Gidrometeoizdat, 1985, p.51-56, In Russian. 4 refs.

Nalets, Ice cover thickness, Ice formation, Ice accretion, Ground water, Icebound rivers.

40-4026

General regional forecasts of the summer-fall discharge of rivers in the excessive paludification zone. (Territorial'no-obshchie prognozy letne-osennego stoka rek zony izbytochnogo uvlazhneniia), Borshch, S.V., *Voprosy gidrologii sush. Doklady konferentsii molodykh uchenykh i spetsialistov* (Hydrology of land areas. Reports presented at a conference of young scientists and specialists) edited by I.V. Popov and S.A. Kondrat'ev, Leningrad, Gidrometeoizdat, 1985, p.99-102, In Russian. 6 refs.

River basins, Swamps, Runoff, Thermokarst.

40-4027

Calculating the increase of soil water obtained by snow retention measures. (Sposob otsenki popolneniia zapasov pochvennoi vlagi v rezul'tate mero-priiatii po snegozaderzhaniiu), Shutov, V.A., *Voprosy gidrologii sush. Doklady konferentsii molodykh uchenykh i spetsialistov* (Hydrology of land areas. Reports presented at a conference of young scientists and specialists) edited by I.V. Popov and S.A. Kondrat'ev, Leningrad, Gidrometeoizdat, 1985, p.106-113, In Russian. 5 refs.

Soll water, Snow depth, Water table, Snow water equivalent, Snow retention.

40-4028

Calculating water content of peat deposits in hummocky bogs. (Metodika rascheta vlagosoderzhaniiia torfianoi zalezhi bugnistykh bolot), Moskvina, I.U.P., et al, *Voprosy gidrologii sush. Doklady konferentsii molodykh uchenykh i spetsialistov* (Hydrology of land areas. Reports presented at a conference of young scientists and specialists) edited by I.V. Popov and S.A. Kondrat'ev, Leningrad, Gidrometeoizdat, 1985, p.113-117, In Russian. 3 refs.

Permafrost distribution, Active layer, Microrelief, Paludification, Peat, Water table, Freeze thaw cycles.

40-4029

Hydrodynamic calculation of water loss on infiltration during the spring flood formation. (Gidrodinamicheskii raschet poter' vody na infil'tratsiiu pri formirovanii vesennego pavodka), Skvortsov, M.I.U., *Voprosy gidrologii sush. Doklady konferentsii molodykh uchenykh i spetsialistov* (Hydrology of land areas. Reports presented at a conference of young scientists and specialists) edited by I.V. Popov and S.A. Kondrat'ev, Leningrad, Gidrometeoizdat, 1985, p.123-126, In Russian. 11 refs.

Flooding, Snow melting, Runoff, Seepage, Ground ice.

40-4030

Laboratory studies of ice jam formation and breakdown. (Laboratornye issledovaniia protsessov formirovaniia i razrusheniia zatvorov l'da), Bolotnikov, G.I., *Voprosy gidrologii sush. Doklady konferentsii molodykh uchenykh i spetsialistov* (Hydrology of land areas. Reports presented at a conference of young scientists and specialists) edited by I.V. Popov and S.A. Kondrat'ev, Leningrad, Gidrometeoizdat, 1985, p.126-130, In Russian. 3 refs.

Models, Ice jams, Icebound rivers, Ice breakup, Laboratory techniques, Equipment.

40-4031

Report of pit-wall observations of snow cover in Sapporo, 1984-85.

Endo, Y., *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1985, No.44, p.1-8, 3 refs., In Japanese. Snow stratigraphy, Boreholes, Japan—Sapporo.

40-4032

Snow cover observations at Avalanche Research Station, Toikanbetsu, Northern Hokkaido, XVII (1984-1985 winter).

Hujioka, T., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1985, No.44, p.9-19, 16 refs., In Japanese. Avalanches, Snow cover, Snow density, Air temperature, Snow depth, Seasonal variations.

40-4033

Strain rates and stresses of snow on a mountain slope, Toikanbetsu, Northern Hokkaido, VII (1984-1985 winter).

Shimizu, H., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1985, No.44, p.21-30, 14 refs., In Japanese. Snow cover stability, Snow strength, Strains, Stresses, Slope orientation, Mountains.

40-4034

Observed rate of evaporation at the surface of a snow cover—additional observations in January and February, 1985 in Sapporo and Kitami, Hokkaido.

Kojima, K., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1985, No.44, p.31-38, 2 refs., In Japanese. Takahashi, S. Snow evaporation, Snow surface, Snow depth.

- 40-4035**  
Radiation measurements of snowy season in 1985 at Sapporo.  
Ishikawa, N., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences. Data report, 1985, No.44, p.39-46, 3 refs., In Japanese.  
Kojima, K., Motoyama, H.  
Snowfall, Radiation, Heat flux, Air temperature, Albedo, Snow depth.
- 40-4036**  
Distribution of pack ice off Okhotsk Sea coast of Hokkaido observed with sea ice radar network, January-April, 1985.  
Aota, M., et al, *Low temperature science (Teion kagaku)*. Series A Physical sciences. Data report, 1985, No.44, p.47-74, In Japanese.  
Sea ice distribution, Pack ice, Radar photography, Okhotsk Sea.
- 40-4037**  
Effect of partial flooding on uplifting ice forces.  
Christensen, F.T., Copenhagen. *Polyteknisk laereanstalt. Institute of Hydrodynamics and Hydraulic Engineering*. Progress report, July 1985, No.63, p.3-16, 8 refs.  
Ice pressure, Structures, Pile extraction, Ice deformation, Ice elasticity, Water level, Water pressure, Flooding, Ice cover effect, Ice solid interface, Analysis (mathematics), Uplift pressure.
- 40-4038**  
Interaction between floating ice sheets and vertical structure due to water level fluctuations.  
Christensen, F.T., Copenhagen. *Polyteknisk laereanstalt. Institute of Hydrodynamics and Hydraulic Engineering*. Series paper, 1986, No.38, 246p., With Danish summary. Refs. p.213-223.  
Offshore structures, Ice loads, Pile extraction, Floating ice, Walls, Ice solid interface, Water level, Flooding, Freezing, Flexural strength, Uplift pressure.
- 40-4039**  
Proceedings of the Symposium: Cold Regions Hydrology.  
Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986], Bethesda, MD, American Water Resources Association, 1986, 612p., Refs. passim. For selected papers see 40-4040 through 40-4097.  
Kane, D.L., ed.  
Glacial hydrology, Snow hydrology, Snow water equivalent, Runoff, Snowmelt, Ice conditions, River ice, Permafrost hydrology, Models, Meetings, Ice melting.
- 40-4040**  
Reservoir operations planning in snowmelt runoff regimes based on simple rule curves.  
Shafer, B.A., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.13-22, 2 refs.  
Runoff forecasting, Snowmelt, Snow hydrology, Reservoirs, Stream flow, Water supply.
- 40-4041**  
Modelling water levels for a lake in the Mackenzie Delta.  
Marsh, P., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.23-29, 15 refs.  
Lake water, Water level, Permafrost hydrology, Models, Hydrology, Water balance, Suprapermafrost ground water, Water flow, Evaporation, Canada—Northwest Territories—Mackenzie River Delta.
- 40-4042**  
Short-wave heating of lake surface water under a candel ice cover.  
Gosink, J.P., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.31-38, 20 refs.  
LaPerriere, J.D.  
Lake water, Ice cover effect, Lake ice, Heat balance, Snow melting, Ice structure, Snow ice interface, Ice surface, Heat transfer, Meltwater.
- 40-4043**  
Hydrothermal modeling of reservoirs in cold regions: status and research needs.  
Harleman, D.R.F., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.39-50, Refs. p.48-50.  
Ice thermal properties, Reservoirs, Water temperature, Thermodynamics, Ice cover effect, Heat transfer, Mathematical models, Hydrothermal processes, Ice formation, Ice melting.
- 40-4044**  
Watershed test of a snow fence to increase streamflow: preliminary results.  
Tabler, R.D., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.53-61, 27 refs.  
Sturges, D.L.  
Snow fences, Watersheds, Stream flow, Blowing snow, Snowmelt, Water supply, Snow accumulation, Snowdrifts, Wind velocity.
- 40-4045**  
Survey of experience in operating hydroelectric projects in cold regions.  
Gemperline, E.J., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.63-72, 8 refs.  
Louie, D.S., Coleman, H.W.  
River ice, Reservoirs, Ice jams, Ice cover strength, Hydrology, Ice cover effect, Electric power, Environmental impact, Banks (waterways), Soil erosion, Flooding.
- 40-4046**  
Hydrology and hydraulic studies for licensing of the Susitna Hydroelectric Project.  
Gemperline, E.J., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.73-85, Refs. p.83-85.  
Hydrology, Hydraulics, Glacial rivers, Stream flow, River ice, Ice cover effect, Heat transfer, Sediment transport, Environmental impact, Electric power, United States—Alaska—Susitna River.
- 40-4047**  
Ice jam flooding—evolution of New York state's involvement.  
Wege, R.E., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.87-92, 3 refs.  
Flooding, Ice jams, Ice booms, Countermeasures.
- 40-4048**  
Hydrological and ecological processes in a Colorado, Rocky Mountain wetland: case study.  
Rovey, E.W., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.93-100, 17 refs.  
Kraeger-Rovey, C., Cooper, L.  
Hydrology, Water level, Runoff, Snowmelt, Ground water, Landforms, Vegetation, Seasonal variations, Mountains, Stream flow, United States—Colorado—Rocky Mountains.
- 40-4049**  
Seasonal snow and auefs in Alaska's taiga.  
Slaughter, C.W., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.101-109, Refs. p.107-109.  
Benson, C.S.  
Taiga, Snow hydrology, Naleds, Snow density, Snowmelt, River ice, Tundra, Snow depth, Seasonal variations, Hoarfrost, Ground water, United States—Alaska.
- 40-4050**  
Water redistribution in partially frozen soil by thermal neutron radiography.  
Clark, M.A., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.113-120, 6 refs.  
Kettle, R.J., D Souza, G.  
Soil water migration, Frozen ground, Ground water, Radiometry, Thermocouples, Measuring instruments, Water content, Neutron irradiation, Temperature gradients.
- 40-4051**  
Development and use of "hot-wire" and conductivity type ice measurement gauges for determination of ice thickness in arctic rivers.  
Sherstone, D.A., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.121-129, 7 refs.  
Prowse, T.D., Gross, H.  
River ice, Ice cover thickness, Electrical resistivity, Ice growth, Ice melting, Measuring instruments, Tests.
- 40-4052**  
Recent developments in hydrologic instrumentation.  
Latkovich, V.J., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.131-134.  
Futrell, J.C., II.  
Stream flow, Ice cover effect, Flow rate, Hydrology, Measuring instruments, Water level, Electronic equipment.
- 40-4053**  
Problems encountered and methods used in the U.S. Geological Survey for the collection of streamflow data under ice cover.  
Cobb, E.D., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.135-142, 4 refs.  
Parks, B.  
Stream flow, Ice cover effect, Flow rate, River ice, River flow, Measuring instruments, Ice conditions, Ice breakup, Frazil ice, Bottom ice.
- 40-4054**  
Role of snowcover on diurnal nitrate concentration patterns in streamflow from a forested watershed in the Sierra Nevada, Nevada, USA.  
Rhodes, J.J., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.157-166, 27 refs.  
Skau, C.M., Greenlee, D.L.  
Water chemistry, Snow cover effect, Stream flow, Watersheds, Hydrology, Runoff, Mountains, Forest land, Snowmelt, United States—Nevada—Sierra Nevada.
- 40-4055**  
Reservoir water quality simulation in cold regions.  
Wei, C.Y., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.167-177, 12 refs.  
Hamblin, P.F.  
Water chemistry, Reservoirs, Ice cover thickness, Suspended sediments, Glacial lakes, Lake ice, Models, Environmental impact, Water temperature, Electric power, United States—Alaska.
- 40-4056**  
Trophic level responses to glacial meltwater intrusion in Alaskan lakes.  
Koenings, J.P., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.179-194, Refs. p.192-194.  
Glacial lakes, Lake water, Glacial hydrology, Snow hydrology, Sediment transport, Snowmelt, Glacier melting, Biomass, Turbulent flow, Meltwater, United States—Alaska.
- 40-4057**  
Factors influencing the quality of snow precipitation and snow throughfall at a Sierra Nevada site.  
Woo, S., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.201-209, 32 refs.  
Berg, N.  
Snowfall, Water chemistry, Forest canopy, Snow cover distribution, Vegetation factors, Precipitation (meteorology), Meltwater.
- 40-4058**  
Thawing of ground frost on a drained and undrained boreal wetland site.  
Swanson, L.E., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.231-236, 13 refs.  
Rothwell, R.L.  
Frozen ground temperature, Ground thawing, Peat, Drainage, Freeze thaw cycles, Water table.
- 40-4059**  
Probability distributions of rain on seasonally frozen soils.  
Zuzel, J.F., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.237-244, 11 refs.  
Frozen ground, Rain, Snow cover effect, Runoff, Distribution, Seasonal variations, Ground ice.

- 40-4060**  
Evidence of groundwater recharge through frozen soils at Anchorage, Alaska.  
Munter, J.A., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.245-252, 13 refs.  
Frozen ground, Soil water migration, Wells, Water level, Seasonal freeze thaw, Precipitation (meteorology), United States—Alaska—Anchorage.
- 40-4061**  
Hydrologic monitoring of subsurface flow and groundwater recharge in a mountain watershed.  
Campana, M.E., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.263-273, 7 refs.  
Boone, R.L.  
Hydrology, Watersheds, Soil water migration, Snowfall, Mountains, Subsurface drainage, Seepage.
- 40-4062**  
Discharge under an ice cover.  
Santeford, H.S., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.275-282, 9 refs.  
Alger, G.R.  
River flow, Ice cover effect, River ice, Models, Hydrology.
- 40-4063**  
Hydrology of two subarctic watersheds.  
Gieck, R.E., Jr., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.283-291, 14 refs.  
Kane, D.L.  
Snowmelt, Runoff, Watersheds, Water balance, Evapotranspiration, Soil water, Water reserves, Water supply, Snow cover effect.
- 40-4064**  
Water balance of the Upper Kolyma Basin.  
Panfilova, V.K., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.293-296, 4 refs.  
Permafrost hydrology, Water balance, Runoff, Precipitation (meteorology), Landscapes, River basins, Evaporation, USSR—Kolyma River.
- 40-4065**  
Water balance and runoff analysis at a small watershed during the snow-melting season.  
Motoyama, H., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.297-304, 6 refs.  
Kobayashi, D., Kojima, K.  
Runoff, Water balance, Snowmelt, Snow water equivalent, Stream flow, Watersheds, Evaporation, Seasonal variations.
- 40-4066**  
Estimations of snowmelting rate in a small experimental site.  
Ishikawa, N., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.305-312, 17 refs.  
Motoyama, H., Kojima, K.  
Snowmelt, Heat balance, Runoff, Snow surface, Degree days, Temperature effects, Watersheds, Diurnal variations, Snow depth.
- 40-4067**  
Methodology for estimating design peak flows for Yukon Territory.  
Janowicz, J.R., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.313-320, 6 refs.  
Glacial hydrology, Snowmelt, River flow, Design, Hydrology, River basins, Rain, Watersheds, Canada—Yukon River.
- 40-4068**  
Effects of seasonally frozen ground in snowmelt modeling.  
Sand, K., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.321-327, 10 refs.  
Kane, D.L.  
Snowmelt, Frozen ground, Runoff, Soil water, Seasonal freeze thaw, Models, Seasonal variations, Rain, Snow depth, Snow water content.
- 40-4069**  
Some aspects of glacier hydrology in the Upper Susitna and MacLaren River basins, Alaska.  
Clarke, T.S., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.329-337, 22 refs.  
Johnson, D., Harrison, W.D.  
Glacial hydrology, Glacier surges, Runoff, River flow, Sediment transport, Precipitation (meteorology), Glacier mass balance, Moraines, United States—Alaska—Susitna River.
- 40-4070**  
Regional distribution of stream icings in Alaska.  
Dean, K.G., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.339-344, 17 refs.  
River ice, Naleds, Ice formation, Distribution, Mountains, Mapping, LANDSAT, Seasonal variations, Temperature effects, Flooding, United States—Alaska.
- 40-4071**  
Estimation of glacier meltwater hydrographs.  
Bjerklic, D., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.345-352, 8 refs.  
Carlson, R.  
Glacier melting, Glacial hydrology, Meltwater, Stream flow, Models.
- 40-4072**  
Snow surface strength and the efficiency of relocation by wind.  
Schmidt, R.A., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.353-358, 6 refs.  
Snow strength, Snow surface, Blowing snow, Snowdrifts, Wind velocity, Impact strength, Measuring instruments.
- 40-4073**  
Water flow rates, porosity, and permeability in snowpacks in the central Sierra Nevada.  
McGurk, B.J., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.359-366, 15 refs.  
Kattelmann, R.C.  
Runoff, Snowmelt, Seepage, Porosity, Snow permeability, Seasonal variations, Water flow, United States—Nevada—Sierra Nevada.
- 40-4074**  
In situ electrical measurements of snow wetness in a deep snowpack in the Sierra Nevada snow zone of California.  
Bergman, J.A., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.367-375, 7 refs.  
Snow water content, Snow cover, Snowmelt, Electrical measurement, Rain, Drainage, Seepage, Mountains, United States—California—Sierra Nevada.
- 40-4075**  
Measurements of snow layer water retention.  
Kattelmann, R., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.377-386, 50 refs.  
Snow hydrology, Snowmelt, Snow cover effect, Water retention, Runoff, Stream flow, Rain.
- 40-4076**  
Precipitation measured by dual gages, Wyoming-shielded gage, and in a forest opening.  
Sturges, D.L., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.387-396, 12 refs.  
Snowfall, Precipitation (meteorology), Forest land, Wind velocity, Air temperature, Precipitation gages, Statistical analysis.
- 40-4077**  
Mass balance of snow cover in the accumulation and ablation periods.  
Kuusisto, E., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.397-403, 43 refs.  
Snow water content, Mass balance, Precipitation (meteorology), Snow accumulation, Ablation, Snowdrifts, Evaporation, Sublimation, Precipitation gages, Snowmelt, Rain.
- 40-4078**  
Riverbank erosion processes of the Yukon River at Culena, Alaska.  
Ashton, W.S., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.415-423, 9 refs.  
Bredthauer, S.R.  
Banks (waterways), Permafrost, Soil erosion, Protective vegetation, Thermal effects, Soil composition, Soil profiles, United States—Alaska—Yukon River.
- 40-4079**  
Modelling snowmelt infiltration and runoff in a prairie environment.  
Gray, D.M., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.427-438, 32 refs.  
Granger, R.J., Landine, F.G.  
Snowmelt, Stream flow, Runoff, Seepage, Models, Frozen ground, Forecasting, Soil water, Watersheds.
- 40-4080**  
Using real-time (SNOTEL) data in the NWSKIM model.  
Cooley, K.R., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.439-448, 4 refs.  
Snowmelt, Stream flow, Snow water equivalent, Water supply, Snow accumulation, Models, Forecasting, Precipitation (meteorology).
- 40-4081**  
Theoretical basis and performance evaluation of current snowmelt-runoff simulation models.  
Tesche, T.W., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.440-459, Refs. p.457-459.  
Runoff, Snowmelt, Snow accumulation, Models, Computer applications.
- 40-4082**  
Recent developments in snowmelt-runoff simulation.  
Bergström, S., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.461-468, 31 refs.  
Snowmelt, Runoff, Snow water equivalent, Models, Forecasting, Snow hydrology.
- 40-4083**  
Role of glacierized basins in Alaskan hydrology.  
Benson, C., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.471-483, Refs. 481-483.  
Glacial hydrology, Snow hydrology, Permafrost hydrology, River ice, Runoff, Glacial deposits, Glacial rivers, United States—Alaska.
- 40-4084**  
Glacier-climate research for planning hydropower in Greenland.  
Braithwaite, R.J., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.485-489, 17 refs.  
Olesen, O.B.  
Glacial hydrology, Meteorological data, Runoff, Climatic factors, Electric power, Greenland.
- 40-4085**  
Forecast procedure for Jokulhlaups on Snow River in Southcentral Alaska.  
Chapman, D.L., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.491-499, 2 refs.  
Glacial lakes, Flood forecasting, Glacial rivers, Ice dams, Glacial hydrology, Subglacial drainage, United States—Alaska.
- 40-4086**  
Suspended sediment budget of a glacier-fed lake.  
Coffin, J.H., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.501-508, 6 refs.  
Ashton, W.S.  
Glacial lakes, Suspended sediments, Stream flow, Glacial hydrology, Environmental impact, Watersheds, United States—Alaska—Eklutna Lake.

- 40-4087**  
Annual runoff rate from glaciers in Alaska; a model using the altitude of glacier mass balance equilibrium. Mayo, L.R., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.509-517, 10 refs. Runoff, Glacier melting, Glacial hydrology, Snowmelt, Glacier mass balance, Snow accumulation, Drainage, Blowing snow, United States—Alaska.
- 40-4088**  
Seasonal and interannual observations and modeling of the snowpack on the Arctic Coastal Plain of Alaska using satellite data. Hall, D.K., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.521-529, 15 refs. Chang, A.T.C., Foster, J.L. Snow cover distribution, Remote sensing, Microwaves, Snow depth, Hoarfrost, Radiometry, Air temperature, Temperature gradients, United States—Alaska.
- 40-4089**  
Operational demonstration of monitoring snowpack conditions utilizing digital geostationary satellite data on an interactive computer system. Allen, M.W., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.531-540, 7 refs. Mosher, F.R. Snow cover distribution, Remote sensing, Snowmelt, Mapping, Climatic factors.
- 40-4090**  
Applying a snowmelt-runoff model which utilizes Landsat data in Utah's Wasatch Mountains. Miller, W., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.541-546, 4 refs. Snowmelt, Runoff, Remote sensing, Stream flow, Models, LANDSAT, Mountains, Flow rate, United States—Utah—Wasatch Mountains.
- 40-4091**  
Initiation of spring snowmelt over Arctic lands. Robinson, D.A., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.547-554, 17 refs. Snowmelt, Runoff, Albedo, Remote sensing, Radiation, Seasonal variations, Temperature effects.
- 40-4092**  
Forecasting the effects on river ice due to the proposed Susitna hydroelectric project. Paschke, N.W., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.557-563, 12 refs. Coleman, H.W. River ice, Electric power, River flow, Ice cover effect, Ice conditions, Ice friction, Ice models, Ice forecasting, United States—Alaska—Susitna River.
- 40-4093**  
A structure to control ice formation and ice jam flooding on Cazenovia Creek, New York. Predmore, S.R., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.565-571, 2 refs. Ice jams, Ice formation, Floods, Ice control, Countermeasures, Watersheds.
- 40-4094**  
Freezeup processes along the Susitna River, Alaska. Bredthauer, S.R., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.573-581, 8 refs. Schoch, G.C. River ice, Freezeup, Ice formation, River flow, Ice conditions, Thermal regime, Electric power, Climatic factors, United States—Alaska—Susitna River.
- 40-4095**  
Growth and decay of river ice covers. Shen, H.T., et al, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.583-591, 12 refs. Lal, A.M.W. River ice, Ice growth, Ice deterioration, Ice melting, Heat transfer, Ice cover thickness, Mathematical models, Snow ice, Colored ice.
- 40-4096**  
Ice jams in regulated rivers in Norway, experiences and predictions. Asvall, R.P., Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.593-602. Ice jams, River ice, Ice formation, River flow, Drainage, Flooding, Flow rate, Frazil ice, Seasonal variations, Electric power, Norway.
- 40-4097**  
Hydrologic aspects of ice jams. Calkins, D.J., MP 2116, Symposium: Cold Regions Hydrology, Fairbanks, Alaska, [1986]. Proceedings. Edited by D.L. Kane, Bethesda, MD, American Water Resources Association, 1986, p.603-609, 14 refs. Ice jams, Hydrology, River ice, Snowmelt, Thermal analysis, River flow. The hydrologic aspects of ice jams have received very little attention. This paper examines hydrologic information that is important for analyzing ice jam flooding problems, such as flow measurements under the ice cover and winter stage rating curves, frequency analysis of winter flow records, watershed cooling and natural river thermal regimes, ice discharge and snowmelt runoff prediction. The significance of each of these areas is addressed and suggested research opportunities are examined. During the last 30 years, the major emphasis has been placed on understanding the hydraulics and mechanics of ice jams and determining their "flood" levels. However, a parameter that should be known with reasonable accuracy is the flow discharge at the ice jam location.
- 40-4098**  
Biological observations in the marginal ice zone of the East Greenland Sea. Smith, S.L., et al, *Journal of marine research*, Aug. 1985, 43(3), p.693-717, Refs. p.714-717. Smith, W.O., Codispoti, L.A., Wilson, D.L. Ice edge, Plankton, Cryobiology, Marine biology.
- 40-4099**  
Transport rate of drifting snow and the mean wind speed profile. Schmidt, R.A., *Boundary-layer meteorology*, Feb. 1986, 34(3), p.213-241, Refs. p.240-241. Snowdrifts, Blowing snow, Wind factors.
- 40-4100**  
Preparation of serial sections in dry snow specimens. Perla, R., et al, *Journal of microscopy*, Apr. 1986, 141(1), p.111-114, 12 refs. Dozier, J., Davis, R.E. Snow crystal structure, Thin sections, Microscope slides.
- 40-4101**  
Mixed implicit-explicit variable grid scheme for a transient environmental ice model. Dilley, J.F., et al, *Numerical heat transfer*, 1986, 9(4), p.391-402, 19 refs. Lior, N. Heat flux, Ice thermal properties, Ice formation, Ice deterioration, Analysis (mathematics).
- 40-4102**  
Relationships between ice crystal size, water content and proton NMR relaxation times in cells. Cameron, I.L., et al, *Physiological chemistry and physics and medical NMR*, 1985, 17(4), p.371-386, Refs. p.385-386. Hunter, K.E., Ord, V.A., Fullerton, G.D. Cryobiology.
- 40-4103**  
Determination of sea ice motion using digital SAR imagery. Curlander, J.C., et al, *IEEE journal of oceanic engineering*, Oct. 1985, OE-10(4), p.358-367, 30 refs. Holt, B., Hussey, K.J. Sea ice distribution, Radar photography, Spaceborne photography, Drift.
- 40-4104**  
Better way to control frost heave. *Better roads*, Feb. 1986, 56(2), p.42-43. Frost heave, Countermeasures.
- 40-4105**  
Influence of lumber property correlations on roof truss reliability. Hamon, D.C., et al, *American Society of Agricultural Engineers. Transactions*, Sep.-Oct. 1985, 28(5), p.1618-1625, 18 refs. Woeste, F.E., Green, D.W. Roofs, Snow loads.
- 40-4106**  
Young arctic frazil sea ice: field and laboratory strength tests. Sinha, N.K., *Journal of materials science*, May 1986, 21(5), p.1533-1546, 23 refs. Young ice, Frazil ice, Ice strength, Tests.
- 40-4107**  
Karhu II; a new generation icebreaker. *Shipping world & shipbuilder*, Oct. 1985, 181(4017), p.501-505. Icebreakers.
- 40-4108**  
Ice-going. *Shipping world & shipbuilder*, Oct. 1985, 181(4017), p.507. Icebreakers.
- 40-4109**  
Scavenging of harmful atmospheric impurities by snowfall. (Auswaschung von Schadstoffen in der Atmosphäre durch Schnee.) Kühn, W., et al, *Atomkernenergie Kerntechnik*, Sep. 1985, 47(2), p.126-127, 4 refs. Bunnberg, C., Weiss, W. Fallout, Pollution, Snowfall.
- 40-4110**  
Active microwave remote sensing of an anisotropic random medium layer. Lee, J.K., et al, *IEEE transactions on geoscience and remote sensing*, November 1985, GE-23(6), p.910-923. Kong, J.A. Sea ice distribution, Radar photography, Remote sensing.
- 40-4111**  
Raman spectra of ice V and ice VI and evidence of partial proton ordering at low temperatures. Minčeva-Sukarova, B., et al, *Journal of molecular structure*, Mar. 1986, 143, p.87-90, 12 refs. Slark, G.E., Sherman, W.F. High pressure ice, Ice spectroscopy, Molecular structure.
- 40-4112**  
All-Union conference on the migration of pollutants in soils and adjacent media, 4th, Obninsk, June, 1983. Proceedings. (Trudy.) Vsesoiuznoe soveshchanie Migratsiia zagriazniaiushchikh veshchestv v pochvakh i soprodel'nykh sredakh, 4th, Obninsk, June 1983, Leningrad, Gidrometeoizdat, 1985, 208p., In Russian. For selected paper see 40-4113. Bobovnikova, T.S.I., ed, Malakhov, S.G., ed. Meetings, Environmental protection, Soil pollution, Water pollution, Pesticides, Metals, Permafrost, Petroleum.
- 40-4113**  
Petroleum transformation in podsol soils of the central Ob' River area. (Transformatsiia nefi v podzolisnykh pochvakh Srednego Priob'ia.) Kalachnikova, I.G., et al, Vsesoiuznoe soveshchanie Migratsiia zagriazniaiushchikh veshchestv v pochvakh i soprodel'nykh sredakh, 4th, June, Obninsk, 1983. Trudy (All-Union Conference on the migration of pollutants in soils and adjacent media, 4th, Obninsk, June 1983. Proceedings) edited by T.S.I. Bobovnikova and S.G. Malakhov, Leningrad, Gidrometeoizdat, 1985, p.74-80, In Russian. 3 refs. Frozen fines, Soil pollution, Active layer, Cryogenic soils, Permafrost.
- 40-4114**  
International symposium on geochemistry of natural waters, 2nd, Rostov-on-Don, May 17-22, 1982. Proceedings. (Trudy.) Mezhdunarodnyi simposium Geokhimiia prirodnnykh vod, 2nd, Rostov-on-Don, May 17-22, 1982, Leningrad, Gidrometeoizdat, 1985, 616p., In Russian. Refs. passim. For selected papers see 40-4115 and 40-4116. Nikanorova, A.M., ed, Valiashko, M.G., ed. Permafrost hydrology, Water supply, Sea ice distribution, Snow cover distribution, Hydrocarbons, Ice cores, Drill core analysis, Snow samples.
- 40-4115**  
Influence of natural conditions on ground water quality in eastern Siberia. (Vlianie prirodnnykh uslovii na kachestvo premykh podzemnykh vod Vostochnoi Sibiri.) Pinneker, E.V., Mezhdunarodnyi simposium Geokhimiia prirodnnykh vod, 2nd, Rostov-on-Don, May 17-22, 1982. Trudy (International symposium on geochemistry of natural waters, 2nd, Rostov-on-Don, May 17-22, 1982. Proceedings) edited by A.M. Nikanorova and M.G. Valiashko, Leningrad, Gidrometeoizdat, 1985, p.399-403, In Russian with English summary. 9 refs. Water supply, Active layer, Permafrost hydrology, Water chemistry, Minerals, Chemical composition, Seasonal freeze thaw.

- 40-4116**  
Composition and distribution of hydrocarbons in snow and ice covers of the Arctic Basin waters. (Sostav i raspredelenie uglevodorodov v snezhno-LEDIANOM pokrove i vodakh Arkticheskogo basseina). Dmitriev, P.A., Mezhdunarodnyy simposium Geokhimiia prirodnnykh vod, 2nd, Rostov-on-Don, May 17-22, 1982. Trudy (International symposium on geochemistry of natural waters, 2nd, Rostov-on-Don, May 17-22, 1982. Proceedings) edited by A.M. Nikanorova and M.G. Vaiazhko, Leningrad, Gidrometeoizdat, 1985, p.563-567, In Russian with English summary. 10 refs.
- Aerosols, Sea ice distribution, Hydrocarbons, Snow cover distribution, Sea water, Ice cores, Drill core analysis, Snow samplers, Composition, Air pollution.**
- 40-4117**  
Large depolarization ratio of the winter antarctic stratospheric aerosol layer: lidar measurement at Syowa Station (69 deg S, 39 deg 35 E), Antarctica. Iwasaka, Y., Meteorological Society of Japan. *Journal*, Apr. 1986, 64(2), p.303-309, With Japanese summary. 18 refs.
- Aerosols, Ice crystals, Air temperature, Atmospheric density, Antarctica—Showa Station.**
- Lidar measurements of stratospheric aerosols, made at Showa Station in 1983, suggest that nonspherical particles were actively formed in the cold winter stratosphere due to the growth of individual ice crystals through sublimation of water vapor molecules. However, the measurement in the early winter showed that the increase in particulate matter in the winter stratosphere is not only due to the growth of individual nonspherical particles but also to some other processes. Additional balloon measurement made on June 3rd showed many large particles (about 15 particles/cu cm) in the lower stratosphere. The growth of Aitken particle to large particle is another possible process causing the increase in particulate matter content in the winter polar stratosphere. (Auth. mod.)
- 40-4118**  
Orientation textures in ice sheets of quietly frozen lakes. Gow, A.J., *Journal of crystal growth*, Feb.-Mar. 1986, 74(2), MP 2118, p.247-258, 19 refs.
- Ice crystal structure, Lake ice.**
- 40-4119**  
Observations of halo scattering from single ice crystals. Pluchino, A., *Optics letters*, May 1986, 11(5), p.276-278, 12 refs.
- Ice crystal optics, Light scattering, Optical phenomena.**
- 40-4120**  
Ice-forming nuclei of maritime origin. Rosinsk, J., et al, *Journal of aerosol science*, Feb. 1986, 17(1), p.23-46.
- Haagenson, P.L.**
- Nucleation, Ice nuclei, Aerosols, Marine meteorology.**
- 40-4121**  
Dependence of ice nucleating ability on misfit. Thangaraj, K., et al, *Journal of materials science letters*, Mar. 1986, 5(3), p.326-328, 3 refs.
- Palanisamy, M., Gobinathan, R., Ramasamy, P.**
- Nucleation, Ice nuclei, Silver iodide.**
- 40-4122**  
Ice warning systems cut the cost of winter maintenance. Harverson, D., *Surveyor*, Jan. 1986, 166(4877), p.8-9.
- Road icing, Monitors, Warning systems.**
- 40-4123**  
Risk analysis for arctic offshore operations. Slomski, S., et al, *Marine technology*, Apr. 1986, 23(2), p.123-130, 3 refs.
- Vivatrak, V.**
- Offshore structures, Ice conditions, Ice loads.**
- 40-4124**  
Full-scale maneuvering tests in level ice of Canmar Kigoriak and Robert Lemeur. Tue-Fee, K.K., et al, *Marine technology*, Apr. 1986, 23(2), p.131-138, 2 refs.
- Keinonen, A.J.**
- Icebreakers, Ice navigation.**
- 40-4125**  
Polymorphism of silica and ice. Bernke, G., et al, *Physical review letters*, Mar. 1986, 56(12), p.1276-1279, 21 refs.
- Bilz, H., Buttner, H.**
- Ice crystal structure, Hydrogen bonds.**
- 40-4126**  
Double-barrelled snow remover. Railway track & structures, Nov. 1985, 81(11), p.35-37.
- Snow removal.**
- 40-4127**  
Cutting the polar ice. Kelly, D.L., *Surveyor*, Aug. 1985, 19(3), p.8-14.
- Ice cutting, Icebreakers, Ice navigation.**
- 40-4128**  
Subtleties of phenomena involving ice-water equilibria. Loucks, L.F., *Journal of chemical education*, Feb. 1986, 63(2), p.115-116, 8 refs.
- Ice melting, Pressure, Ice water interface.**
- 40-4129**  
Earth observations and the polar platform. McElroy, J.H., et al, *U.S. national Oceanic and Atmospheric Administration. NOAA technical report*, Jan. 1985, NESDIS-18, 16p., PB85-177 624, 2 refs.
- Schneider, S.R.**
- Remote sensing, Ice conditions, Oceanography, Meteorology, Microwaves.**
- 40-4130**  
Report on containment and disposal of drilling fluids in the Northwest Territories. Dames and Moore, *Arctic Petroleum Operators' Association. Report*, Mar. 1974, APOA 73-2, 82p., Refs. p.80-82.
- Drilling fluids, Waste disposal, Revegetation, Topographic features, Thermokarst, Design, Soil composition, Land reclamation, Swamps.**
- 40-4131**  
Evaluation of the electrical frost probe. Hayhoe, H.N., et al, *Journal of agricultural engineering research*, Apr. 1986, 33(4), p.281-287, 9 refs.
- Mack, A.R., Brach, E.J., Balchin, D.**
- Soil freezing, Soil water, Dielectric properties, Ice electrical properties, Electrical measurement.**
- 40-4132**  
Bulk transfer coefficient over a snow surface. Kondo, J., et al, *Boundary-layer meteorology*, Jan. 1986, 34(1-2), p.123-135, Refs. p.135.
- Yamazawa, H.**
- Snow surface, Snow air interface, Heat transfer, Vapor transfer.**
- 40-4133**  
Volcano/ground ice interactions in Elysium Planitia, Mars. Mouginis-Mark, P.J., *Icarus*, Nov. 1985, 64(2, Pt. 1), p.265-284, Refs. p.283-284.
- Extraterrestrial ice, Mars (planet), Ground ice, Volcanoes.**
- 40-4134**  
Formation of soil frost as influenced by tillage and residue management. Pikul, J.L., Jr., et al, *Journal of soil and water conservation*, May-June 1986, 41(3), p.196-199, 16 refs.
- Zuzel, J.F., Greenwalt, R.N.**
- Soil freezing, Frost penetration, Frozen ground temperature, Vegetation factors.**
- 40-4135**  
Progress in snow hydrology remote-sensing research. Rango, A., *IEEE transactions on geoscience and remote sensing*, Jan. 1986, GE-24(1), p.47-53, 21 refs.
- Remote sensing, Spaceborne photography, Snow hydrology.**
- 40-4136**  
Passive microwave remote sensing of an anisotropic random-medium layer. Lee, J.K., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1985, GE-23(6), p.924-932, 16 refs.
- Kong, J.A.**
- Remote sensing, Sea ice.**
- 40-4137**  
Arctic submarine pipeline protection is calculated by optimization model. Nessim, M.A., et al, *Oil & gas journal*, Jan. 20, 1986, 84(3), p.66-73, 17 refs.
- Jordan, I.J.**
- Hydraulic structures, Underground pipelines, Ice scoring.**
- 40-4138**  
Isotope geochemistry of frost-bilster ice, North Fork Pass, Yukon, Canada. Michel, F.A., *Canadian journal of earth sciences*, Apr. 1986, 23(4), p.543-549, Refs. p.549.
- Ground ice, Frost heave, Isotopes.**
- 40-4139**  
Ground-ice investigations, Klondike District, Yukon Territory. French, H.M., et al, *Canadian journal of earth sciences*, Apr. 1986, 23(4), p.550-560, Refs. p.559-560.
- Pollard, W.H.**
- Ground ice, Placer mining, Canada—Yukon Territory—Klondike District.**
- 40-4140**  
Shore topography and spatial partitioning of crevice refuges by sessile epibenthos in an ice disturbed environment. Bergeron, P., et al, *Marine ecology progress series*, Jan. 1986, 28(1-2), p.129-145, Refs. p.143-145.
- Bourget, E.**
- Ice scoring, Sediments.**
- 40-4141**  
Studies of the performance of short piles in regional pebbly soils of Krasnoyarsk. (Issledovanie raboty korotkikh svai v regional'nykh galechnikovykh gruntakh Krasnoyarska). Bulankin, N.F., et al, *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E317, p.53, In Russian. Abstracted from Osnovaniia, fundamenti i inzhenernye kommunikatsii v usloviakh Vostochnoi Sibiri i Krai nego Severa. Krasnoyarsk, 1983, p.41-47.
- Ivanov, V.F.**
- Foundations, Piles, Permafrost beneath structures, Bearing strength, Shear stress.**
- 40-4142**  
Permafrost and hydrogeological conditions of eastern Siberia (Novosibirsk, Nauka, 1984. 191p.). (Merzlotno-gidrogeologicheskie uslovia Vostochnoi Sibiri). Mel'nikov, P.I., ed, *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E398 K, p.64, Abstract only. In Russian.
- Permafrost distribution, Permafrost structure, Permafrost hydrology.**
- 40-4143**  
Bases, foundations and engineering communications under conditions of eastern Siberia and the Far North. (Osnovaniia, fundamenti i inzhenernye kommunikatsii v usloviakh Vostochnoi Sibiri i Krai nego Severa). Referativnyi zhurnal. Geologiya OBE, 1985, No.1, abstract No. 1 E400 K, p.64, In Russian. Abstract only. The monograph published by Proektnyi nauchno-issledovatel'skii institut "Krasnoyarskii Promstroiniproekt". Sbornik trudov. Krasnoyarsk, 1983. 102p.
- Foundations, Permafrost bases, Piles, Thermopiles, Permafrost control, Shear stress.**
- 40-4144**  
Accelerated technique for studying strength of frozen ground. (Issledovanie prochnostnykh kharakteristik merzlykh gruntov po uskorennoi metodike). Kononov, A.A., et al, *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E402, p.65, In Russian. Abstracted from Osnovaniia, fundamenti i inzhenernye kommunikatsii v usloviakh Vostochnoi Sibiri i Krai nego Severa. Krasnoyarsk, 1983, p.56-63.
- Pakhomov, S.M.**
- Frozen ground strength, Tests, Equipment.**
- 40-4145**  
Modeling heat transfer between ground and a thermally convective device during seasonal alternations. (Modelirovanie teplovogo vzaimodelstviia grunta s termokonvektivnym ustroistvom pri cheredovanii sezonov goda). Medvedskii, R.I., et al, *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E406, p.65, In Russian. Abstracted from Intensifikatsii geologo-razvedochnykh rabot i dobychi nefi v Zapadnoi Sibiri, Tiumen', 1984, p.87-90.
- Shevtsov, V.I.**
- Thermopiles, Frozen ground thermodynamics, Heat transfer, Mathematical models, Seasonal variations, Permafrost control.**
- 40-4146**  
Frost heave of peat soils. (Kriogennoe puchenie torfobraznykh gruntov). Kliuev, P.I., et al, *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E419, p.67, In Russian. Abstracted from Intensifikatsii geologo-razvedochnykh rabot i dobychi nefi v Zapadnoi Sibiri, Tiumen', 1984, p.87-90.
- Zinov'eva, G.V.**
- Swamps, Organic soils, Frost heave, Peat, Frost penetration, Ice formation.**

40-4147

Calculation of tangential forces of frost heave in permafrost. (Raschet kasatel'noi sily pucheniiia pri mnogoletnem promerzanii grunta). Pustovolt, G.P., *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E420, p.67, In Russian. Abstracted from Nauchno-issledovatel'skii institut osnovanii i podzemnykh sooruzhenii. Trudy, 1983, No.79, p. 78-84.

Active layer, Frost heave, Frost penetration, Permafrost.

40-4148

Entropy as a factor in improved engineering-geological regionalization methods. (Entropiia kak faktor povysheniia rezul'tativnosti metodik inzhenerno-geologicheskogo racionirovaniia). Kosinskii, A.K., et al, *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E428, p.69, In Russian. Abstracted from Osnovaniia, fundamenti i inzhenernye kommunikatsii v usloviakh Vostochnoi Sibiri i Kralnego Severa. Krasnoyarsk, 1983, p.64-71. Minguzinova, O.A.

Mapping, Permafrost physics, Mechanics, Engineering geology, Classifications.

40-4149

Determining design temperatures of permafrost bases. (K voprosu ob opredelenii raschetnykh temperatur vechnomerzlykh osnovanii). Shchelokov, V.K., *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E432, p.69, In Russian. Abstracted from Nauchno-issledovatel'skii institut osnovanii i podzemnykh sooruzhenii, Trudy, No.79, p.102-107.

Permafrost bases, Permafrost thermal properties, Frozen rock temperature, Bearing strength.

40-4150

Calculation of temperature regime of permafrost bases beneath buildings with crawl spaces after preliminary deep cooling of the bases. (Raschet temperaturnogo rezhima vechnomerzlykh osnovanii zdaniil s podpol'nom pri ikh predvaritel'nom glubinnom okhlazhdenii). Fedorovich, D.I., et al, *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E433, p.69, In Russian. Abstracted from Nauchno-issledovatel'skii institut osnovanii i podzemnykh sooruzhenii, Trudy, 1983, No.79, p.78-84.

Ivanov, M.M.

Buildings, Foundations, Permafrost bases, Thermal regime.

40-4151

Thermal interaction between a heated pipeline and frozen ground. (Teplovoe vzaimodel'stvie elektroobogrevayemogo truboprovoda s merzlym gruntom). Karpov, V.I., *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E435, p.69, In Russian. Abstracted from Osnovaniia, fundamenti i inzhenernye kommunikatsii v usloviakh Vostochnoi Sibiri i Kralnego Severa. Krasnoyarsk, 1983, p.85-95.

Pipelines, Hot oil lines, Permafrost beneath structures, Heat transfer.

40-4152

Construction of shallow foundations in rammed-down areas on frost-heaving ground with preliminary soil stabilization. (Ustroistvo melkokozaglublennykh fundamentov v vytrambovannykh kotlovanakh na puchiniistykh gruntakh s primeneniem protivopuchinnoi stabilizatsii). Khalimov, O.Z., *Referativnyi zhurnal. Geologiya OBE*, 1985, No.1, abstract No. 1 E437, p.70, In Russian. Abstracted from Nauchno-issledovatel'skii institut osnovanii i podzemnykh sooruzhenii. Trudy, 1983, No.79, p.98-101.

Foundations, Soil stabilization, Chemical ice prevention, Frost heave.

40-4153

Development test II (DT II) one-side expandable rigid wall shelter. Hayes, R.E., et al, *U.S. Army. Cold Regions Test Center, Fort Greely, AK. Final report*, Aug. 1980, TECOM 8-ES-975-ISO-005, 41p. + appends., ADB-049 931L, 16 refs.

Naegle, B.R.

Shelters, Cold weather tests, Temperature effects, Safety.

40-4154

Oceanographic and marine biological data from routine observations near Syowa Station between Feb. 1983 and Jan. 1984 (JARE-24). Watanabe, K., et al, *Japanese Antarctic Research Expedition. JARE data reports*, Mar. 1986, No.114, 22p., 1 ref.

Satoh, H., Kanda, H., Takahashi, E.

Ice volume, Snow depth, Antarctica—Showa Station.

A three-year program of marine biological investigations in the fast ice area near Showa Station is reported. Water samples for physical and chemical analyses were collected from different depths, between Feb. 16, 1983, and Jan. 13, 1984, at three locations, which are listed. Seasonal variations of ice and snow thickness, and water temperature, salinity, chemistry and pigment ratio, are tabulated. Some data on plankton collected by vertical haul are also presented.

40-4155

Recommendations for the performance of advance investigations on construction in permafrost areas. (Rekomendatsii po proizvodstvu operazhishchikh issledovaniil dlia stroitel'stva v rasonakh rasprostraneniia vechnomerzlykh gruntov). Moscow, Stroizdat, 1986, 87p., In Russian with English table of contents enclosed. 21 refs.

Maps, Permafrost distribution, Permafrost physics, Engineering geology, Geocryology, Pipelines, Permafrost thermal properties, Permafrost beneath structures, Surveying.

40-4156

Chloride penetration and the deterioration of concrete bridge decks. Cady, P.D., et al, *Cement, concrete, and aggregates*, 1983, 5(2), p.81-86, 17 refs.

Weyers, R.E.

Salting, Corrosion.

40-4157

Resistance to freezing and thawing of silica fume concrete. Aitcin, P., et al, *Cement, concrete, and aggregates*, 1984, 6(1), p.38-42, 9 refs.

Vezina, D.

Concrete freezing, Concrete aggregates.

40-4158

Influence of petrography of argillaceous carbonates on their frost resistance in concrete. West, T.R., et al, *Cement, concrete, and aggregates*, 1984, 6(2), p.84-89, Refs. p.88-89.

Shakoor, A.

Concrete freezing, Concrete aggregates.

40-4159

Durability of concrete. Rodway, L.E., *Cement, concrete, and aggregates*, 1985, 7(1), p.43-48, 16 refs.

Concrete durability, Concrete freezing, Freeze thaw cycles.

40-4160

Character of glaciotectionism. Aber, J.S., *Geologie en mijnbouw*, 1985, 64(4), p.389-395, Refs. p.395.

Glacier flow, Glacial geology, Tectonics.

40-4161

Mapping surface currents with CODAR. Barrick, D.E., et al, *Sea technology*, Oct. 1985, 26(10), p.43-48.

Lipa, B.J., Crissman, R.D.

Spaceborne photography, Icebergs, Pack ice, Drift.

40-4162

Arctic ice and drilling structures. Sodhi, D.S., *Mechanical engineering*, Apr. 1985, 107(4), MP 2119, p.63-69.

Offshore structures, Drilling, Ice loads.

40-4163

Saturation of LANDMASS MSS detectors over large ice masses. Dowdeswell, J.A., et al, *International journal of remote sensing*, Jan. 1986, 7(1), p.151-164, Refs. p.164.

McIntyre, N.F.

Spaceborne photography, Remote sensing, Ice sheets.

LANDSAT provides synoptic imagery for the study of large ice masses in the inaccessible polar regions. Even minor ice surface topographic detail can be identified as differences in relative brightness. However, radiance from such surfaces can be greater than the maximum MSS detector calibration. This results in detector saturation and consequent loss of information. Using MSS digital data from snow surfaces in both polar regions, corrected to radiance values to account for detector calibration changes, a model relating detector saturation in each MSS band to changes in Sun elevation is presented. Examples of applications to antarctic ice sheets and ice shelves are offered (Auth. mod.)

40-4164

Wave and ice impact loading and response of ocean structures. Massachusetts Institute of Technology. Marine Industry Collegium. Opportunity brief, 1985, No.39, MIT, Sea Grant College Program, Report No.MITSG 85-20, 19p., Revised edition. 19 refs.

Ice loads, Ice navigation, Offshore structures, Ocean waves, Hydrodynamics, Impact strength, Damage.

40-4165

Effects of friction losses in water-flow pipe systems on the freeze-off conditions. Hirata, T., *International journal of heat and mass transfer*, June 1986, 29(6), p.949-951, 4 refs.

Water pipes, Friction, Pipeline freezing, Heat transfer, Ice water interface, Ice structure, Water flow, Heat flux, Ice cover thickness, Analysis (mathematics).

40-4166

MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West. Wadhams, P., ed, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, 119p., ADA-167 310, Refs. passim. For individual papers see 40-4167 through 40-4180.

Sea ice distribution, Ice air interface, Ice water interface, Ice mechanics, Remote sensing, Ice conditions, Ice edge, Ice floes, Wind factors, Water temperature.

40-4167

Observations of ice and snow in the eastern part of the Chukchi Sea: a serendipitous cruise on the Polar Sea. Hanson, A.M., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.1-10, ADA-167 310, 11 refs.

Snow ice, Sea ice distribution, Snow cover distribution, Ice conditions, Snow composition, Snow depth, Wind velocity, Pressure ridges, Temperature variations, Chukchi Sea.

40-4168

Introduction to MIZEX-West. Martin, S., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.11-12, ADA-167 310.

Sea ice distribution, Microwaves, Radiometry, Ice conditions, Remote sensing, Ice edge, Polynyas, Heat flux, Bering Sea.

40-4169

Temperature and salinity observations in the Bering Sea winter MIZ. Muench, R.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.13-30, ADA-167 310, 10 refs.

Newton, J.L., Rice, R.L.

Water temperature, Water chemistry, Salinity, Ice edge, Ice cover effect, Seasonal variations, Distribution, Bering Sea.

40-4170

Regional ice drift during MIZEX-West. Reynolds, R.M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.31-37, ADA-167 310, 6 refs.

Pease, C.H.

Ice mechanics, Drift, Ice edge, Wind factors, Surface temperature, Velocity, Ice floes, Bering Sea.

40-4171

Ice dispersion in the Bering Sea Marginal Ice Zone. Martin, S., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.38-49, ADA-167 310, 16 refs.

Thorndike, A.S.

Ice mechanics, Ice floes, Turbulent diffusion, Drift, Remote sensing, Time factor, Analysis (mathematics), Bering Sea.

- 40-4172**  
Motion of ice edge radar transponders during MIZEX-West.  
Wadhams, P., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.50-67, ADA-167 310, 15 refs.  
O'Farrell, S.P.  
Ice floes, Ice mechanics, Drift, Ice edge, Velocity, Wind factors, Ocean currents, Bering Sea.
- 40-4173**  
Bottom ablation measurements and heat transfer coefficients from MIZEX-West, February 1983.  
Josberger, E.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.68-72, ADA-167 310, 8 refs.  
Meldrum, D.  
Ice floes, Ablation, Ice bottom surface, Ice edge, Heat transfer, Ice melting, Water temperature, Ocean currents, Sea ice distribution, Bering Sea.
- 40-4174**  
Some wave attenuation results from MIZEX-West.  
Squire, V.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.73-78, ADA-167 310, 3 refs.  
Wadhams, P.  
Ice mechanics, Ice edge, Wave propagation, Ice conditions, Attenuation.
- 40-4175**  
Further aircraft measurements of air-ice drag coefficients.  
Overland, J.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.79-83, ADA-167 310, 4 refs.  
Walter, B.A., Jr.  
Ice mechanics, Boundary layer, Ice air interface, Heat flux, Wind velocity, Remote sensing.
- 40-4176**  
Geostrophic drag of the high latitude atmospheric boundary layer.  
Overland, J.E., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.84-89, ADA-167 310, 16 refs.  
Ice floes, Boundary layer, Surface roughness, Pressure ridges, Buoyancy, Ice air interface, Analysis (mathematics).
- 40-4177**  
NASA CV-990 aircraft observations during MIZEX-West.  
Cavaliere, D.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.90-96, ADA-167 310, 1 ref.  
Gloersen, P., Wilhelm, T.T.  
Sea ice distribution, Remote sensing, Microwaves, Ice edge, Ice conditions, Radiometry, Measuring instruments.
- 40-4178**  
Measurement of the complex refractive index of first-year sea ice and snow using a microwave untuned cavity.  
Knight, R.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.97-104, ADA-167 310, 8 refs.  
Llewellyn-Jones, D.T.  
Ice electrical properties, Sea ice, Snow electrical properties, Microwaves, Ice salinity, Refractivity, Dielectric properties, Salinity, Temperature effects, Attenuation.
- 40-4179**  
Fluctuations of flow through Bering Strait.  
Schumacher, J.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.105-111, ADA-167 310, 14 refs.  
Roach, A.T., Aagaard, K.  
Water transport, Ice conditions, Flow rate, Ocean currents, Biomass, Wind factors, Velocity, Seasonal variations, Chukchi Sea, Bering Strait.
- 40-4180**  
Theory of wind-driven coastal polynyas.  
Pease, C.H., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1985, SR 85-06, MIZEX—a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 6: MIZEX-West, p.112-119, ADA-167 310, 10 refs.  
Polynyas, Ice mechanics, Ice density, Ice floes, Frazil ice, Wind factors, Water temperature, Ice formation, Air temperature, Analysis (mathematics), Heat flux.
- 40-4181**  
Convection Stefan problem by Lagrange-Bürmann expansion. 1. Small time solution.  
Tokuda, N., *Physical Society of Japan. Journal*, Dec. 1985, 54(12), p.4513-4523, 19 refs.  
Low temperature research, Stefan problem, Boundary value problems, Heat balance, Analysis (mathematics).
- 40-4182**  
Efficient algorithm for finite element solution to two-dimensional heat transfer with melting and freezing.  
Hsiao, J.S., et al, *Journal of heat transfer*, May 1986, 108(2), p.462-464, 12 refs.  
Chung, T.F.  
Freeze thaw cycles, Heat transfer, Ice melting, Ice formation, Phase transformations, Analysis (mathematics).
- 40-4183**  
Visible and infrared extinction in falling snow.  
Seagraves, M.A., *Applied optics*, Apr. 1986, 25(7), p.1166-1169, 15 refs.  
Visibility, Light transmission, Snowfall, Snow optics.
- 40-4184**  
Performance degradation of helicopters due to icing—a review.  
Korkan, K.D., et al, *Vertica*, 1986, 10(1), p.23-45, Refs. p.44-45.  
Dadone, L., Shaw, R.J.  
Aircraft icing, Helicopters.
- 40-4185**  
Sea-floor morphology outside a grounded, surging glacier, Bråsvellbreen, Svalbard.  
Solheim, A., et al, *Marine geology*, May 1985, 65(1/2), p.127-143, Refs. p.142-143.  
Pfirman, S.L.  
Ice scoring, Glacier surges, Glacial deposits, Bottom topography, Ocean bottom.
- 40-4186**  
Protonic photoconductivity of ice.  
Petrenko, V.F., et al, *Physica status solidi, Ser. A*, Feb. 1986, 93(2), p.695-702, 13 refs.  
Ebinuma, T., Mieno, N.  
Conduction, Radiation absorption, Ice optics, Protons.
- 40-4187**  
Study of the microwave brightness temperature of snow from the point of view of strong fluctuation theory.  
Stogryn, A., *IEEE transactions on geoscience and remote sensing*, Mar. 1986, GE-24(2), p.220-231, Refs. p.230-231.  
Snow albedo, Remote sensing, Microwaves, Snow temperature.
- 40-4188**  
Power transformers and shunt reactors for arctic regions.  
Lampe, W., *IEEE transactions on power delivery*, Jan. 1986, PWRD-1(1), p.217-224, 14 refs.  
Electric equipment, Cold weather operation, Ice loads, Power line icing, Lubricants.
- 40-4189**  
Snow chemistry of the Cascade-Sierra Nevada mountains.  
Laird, L.B., et al, *Environmental science and technology*, Mar. 1986, 20(3), p.275-290, Refs. p.290.  
Taylor, H.E., Kennedy, V.C.  
Snow composition, Snow impurities, Air pollution.
- 40-4190**  
Influence of snowcover development and ground freezing on cation loss from a wetland watershed during spring runoff.  
Pierson, D.C., et al, *Canadian journal of fisheries and aquatic sciences*, Dec. 1985, 42(12), p.1979-1985, Refs. p.1984-1985.  
Taylor, C.H.  
Snow composition, Snowmelt, Runoff, Snow retention.
- 40-4191**  
Evolution of snow removal equipment. (Hokkaido Kaihatsukyoku ni okeru josetsu kikai no hensen), Hokkaido Developmental Bureau. Construction and Mechanical Research Institute, Sapporo, Japan, 1980, 179p., In Japanese. Refs. p.171-175.  
Snow removal, Equipment.
- 40-4192**  
Freeze-thaw durability of fiber reinforced concrete.  
Balaguru, P.N., et al, *American Concrete Institute. Journal*, May-June 1986, No.3 (Proceedings vol.83), p.374-382, 7 refs.  
Ramakrishnan, V.  
Concrete durability, Freeze thaw cycles, Reinforced concretes, Elastic properties, Water cement ratio, Air entrainment, Fibers.
- 40-4193**  
Cryogenic insulating concrete—cement-based concrete with polystyrene beads.  
Cheng, C.L., et al, *American Concrete Institute. Journal*, May-June 1986, No.3 (Proceedings vol.83), p.446-454, 6 refs.  
Lee, M.K.  
Concrete aggregates, Cryogenics, Thermal insulation, Concrete strength, Liquefied gases, Resins, Mechanical properties, Protective coatings, Specific heat, Thermal properties.
- 40-4194**  
Microphysical processes of melting snowflakes detected by two-wavelength radar. Part 1. Principle of measurement based on model calculation.  
Yokoyama, T., et al, *Meteorological Society of Japan. Journal*, Aug. 1984, 62(4), p.650-667, With Japanese summary. 20 refs.  
Tanaka, H.  
Snow melting, Snowflakes, Microstructure, Snow physics, Microwaves, Radar echoes, Scattering, Particle size distribution, Mathematical models.
- 40-4195**  
Microphysical processes of melting snowflakes detected by two-wavelength radar. Part 2. Application of two-wavelength radar technique.  
Yokoyama, T., et al, *Meteorological Society of Japan. Journal*, Aug. 1984, 62(4), p.668-677, 15 refs.  
Tanaka, H., Nakamura, K., Awaka, J.  
Snowflakes, Snow melting, Snow physics, Radar echoes, Microwaves, Scattering, Coalescence, Evaporation, Meteorological factors.
- 40-4196**  
Remote sensing of the Arctic seas.  
Weeks, W.F., et al, *Oceanus*, 1986, 29(1), MP 2117, p.59-64, 7 refs.  
Carsey, F.D.  
Sea ice distribution, Ice conditions, Remote sensing, Microwaves, Ice mechanics, Ice cover thickness, Radiation balance, Air temperature, Arctic Ocean.
- 40-4197**  
Collision of large floating ice feature with massive offshore structure.  
Gershunov, E.M., *Journal of waterway, port, coastal and ocean engineering*, May 1986, 112(3), p.390-401, 18 refs.  
Ice loads, Offshore structures, Floating ice, Impact strength, Ice solid interface, Ice volume, Mathematical models.
- 40-4198**  
Chemical analysis of samples from experimental northern terrestrial oil spills.  
Mackay, D., et al, *Canada. Department of Indian and Northern Affairs. Environmental studies*, 1984, No.32, 40p., 9 refs.  
McCurdy, D., Shiu, W.Y.  
Oil spills, Chemical analysis, Tundra, Taiga, Degradation, Evaporation, Canada—Mackenzie River.
- 40-4199**  
15th annual Arctic Workshop, April 24-26, 1986.  
Arctic Workshop, 15th, Boulder, CO, Apr. 24-26, 1986, Boulder, University of Colorado, 1986, 79p., Abstracts only. Refs. passim.  
Ice sheets, Snow cover, Vegetation, Ice scoring, Ice mechanics, Sedimentation, Paleoclimatology, Glacial deposits, Landforms.

## 40-4200

**Ice avalanches.** [Eislawinen]. Alcan, J., *Die Alpen*, 1985, 61(3), p.121-132, In German with English summary. 6 refs. **Glacier ablation, Avalanche formation, Ice mechanics, Damage, Mountains, Switzerland—Alps.**

## 40-4201

**Assessment of environmental effects on construction, operation, and abandonment of a man-made gravel island; Niakuk well No.3 in Stefansson Sound, Alaska.**

Evans, C.D., et al, Anchorage, Alaska, Arctic Environmental Information and Data Center, Oct. 1978, 92p. + append., Refs. 79-92.

## DLC AEIDC, QH541.5 A7 A515

**Artificial islands, Environmental impact, Human factors, Gravel, Ice loads, Ecosystems, Waste disposal, Water reserves, United States—Alaska.**

## 40-4202

**Automatic reading device for an ice calorimeter.** Zakurenko, O.E., et al, *Instruments and experimental techniques*, Sep.-Oct. 1984 (Pub. Apr. 85), 27(5 Pt.2), p.1292-1293, Translated from *Pribory i tekhnika eksperimenta*. 2 refs.

Kuz'michev, V.M.

**Ice physics, Measuring instruments, Calorimeters, Atmospheric pressure, Heat measurement.**

## 40-4203

**Landscape-geochemical analysis of taiga geosystem dynamics.** [Landschaftno-geokhimicheskii analiz dinamiki taizhnykh geosistem]. Nechaeva, E.G., Irkutsk, 1985, 209p., In Russian with English table of contents enclosed. Refs. p.194-209. **Taiga, Cryogenic soils, Economic development, Environmental protection, Permafrost distribution, Permafrost hydrology, Mapping, Geochemistry, Landscape types.**

## 40-4204

**Glaciological investigations in Siberia.** [Gliatsiologicheskii issledovaniia v Sibiri]. Vorob'ev, V.V., ed, Irkutsk, 1985, 169p., In Russian. For individual papers see 40-4205 through 40-4215. Refs. passim.

**Brines, Artificial ice, Ice formation, Ice composition, Impurities, Desalting, Naleds, Permafrost hydrology, Ice (water storage), Chemical composition, Mathematical models.**

## 40-4205

**Theoretical studies of desalination by trickling flow.** [Teoreticheskie issledovaniia o desal'tatsionnykh vodnykh metodakh kapel'nogo namorazhivaniia].

Alekseev, V.R., et al, Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.5-18, In Russian. 12 refs.

Smorygin, G.I.

**Brines, Ice composition, Impurities, Desalting.**

## 40-4206

**Regularities governing the formation and distribution of naleds on rivers of southern East Siberia.** [Zakonomernosti formirovaniia i rasprostraneniia naledov na rekakh juga Vostochnoi Sibiri].

Kravchenko, V.V., Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.19-38, In Russian. 16 refs.

**Permafrost hydrology, Permafrost beneath rivers, Naleds, Ice volume, Ice accretion.**

## 40-4207

**Field studies of the river-naled formation process.** [Naturanoe issledovaniia protsessa obrazovaniia rechnykh naledov].

Kravchenko, V.V., Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.38-63, In Russian. 9 refs.

**Rivers, Naleds, Ice accretion, Permafrost hydrology, Models.**

## 40-4208

**Mechanism of river-naled formation.** [Osnovnye zakonomernosti mekhanizma vozniknoveniia naledov rechnykh vod].

Chizhov, A.N., Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.63-73, In Russian. 8 refs.

**Icebound rivers, Permafrost beneath rivers, Naleds, Subglacial drainage, Ice formation, Permafrost hydrology.**

## 40-4209

**Role of ice cover in the formation of winter river discharge in Transbaikalia.** [Rol' ledianogo pokrova v formirovaniu zimnego stoka rek Zabaikal'ia].

Kravchenko, V.V., et al, Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.73-91, In Russian. 8 refs.

Chernykh, O.A.

**Icebound rivers, Subglacial drainage, Ice cover thickness, Runoff.**

## 40-4210

**Calculating water reserves in river-ice covers and naleds for estimating ground water resources in central regions of the BAM zone.** [Raschet zapasov vody v ledianom pokrove rek i naledakh dlia otsenki resursov podzemnykh vod v tsentral'nykh rayonakh zony BAM].

Defkin, B.N., et al, Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.102-109, In Russian. 11 refs.

Markov, M.L.

**Ice (water storage), River ice, Naleds.**

## 40-4211

**Naled effect on the development of vegetational cover.** [Vliianie naledov na razvitie rastitel'nogo pokrova].

Alekseev, V.R., et al, Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.102-109, In Russian. 16 refs.

Novitskaia, N.I.

**Naleds, Vegetation, Plant ecology, Landscape types, Frost heave, Ice cover thickness, Ecosystems, Alpine tundra, Taiga, Deserts.**

## 40-4212

**Chemical composition of ground ice in the Severnaya pipe.** [Khimicheskii sostav podzemnykh l'dov trubki Severnaya].

Alekseev, V.R., et al, Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.129-136, In Russian. 9 refs.

Borisov, V.N.

**Ground ice, Permafrost thickness, Frozen rock temperature, Mining, Ice composition, Chemical composition.**

## 40-4213

**Calculating volumes of ground water naleds allowing for the morphometry of river naled areas.** [Raschet ob'ema naledov podzemnykh vod s uchetom morfometrii nalednykh uchastkov rek].

Markov, M.L., Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.137-145, In Russian. 11 refs.

**Naleds, Ice (water storage), Ice volume, Accuracy, Ground waters, Mathematical models.**

## 40-4214

**Methods of studying and calculating injected ice characteristics on naled plains.** [Metody issledovaniia i raschet kharakteristik in'ektsionnykh l'dov na nalednykh polianakh].

Defkin, B.N., Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.146-158, In Russian. 8 refs.

**Permafrost depth, Plains, Naleds, Permafrost hydrology, Surface waters, Ground water.**

## 40-4215

**Determining the freezing time of artificial moist porous ice.** [Opredelenie vremeni promerzaniia iskusstvennykh pokrovov iz vlazhnogo rykhlogo l'da].

Fandeev, V.V., et al, Gliatsiologicheskii issledovaniia v Sibiri (Glaciological investigations in Siberia) edited by V.V. Vorob'ev, Irkutsk, 1985, p.159-168, In Russian. 4 refs.

Smorygin, G.I.

**Artificial ice, Ice formation, Freezing rate.**

## 40-4216

**Proceedings of the Seventh Symposium on Polar Biology.**

Hoshiai, T., ed, Tokyo. *National Institute of Polar Research. Memoirs*, Feb. 1986, Special issue No.40, 497p., Refs. passim. For individual papers see 40-4217 through 40-4223 or B-34052 through 34083, 34088 through 34092, I-34094, J-34084 through 34087, 34093, and 34095 through 34098.

Nemoto, T., ed, Naito, Y., ed.

**Marine biology, Sea ice, Cryobiology, Microbiology.** The seventh Symposium on Polar Biology was held at the National Institute of Polar Research, Tokyo, from Jan. 9 to 11,

1985. This volume contains 55 articles, 47 of which deal with elements of the antarctic ecosystems, physical and chemical environment, phytoplankton and primary productivity, zooplankton and micronekton, benthic fauna, sea birds and marine mammals. They include topics on the transportation of matter and the transfer of artificial pollutants in the ecosystem.

## 40-4217

**Short-term variation of chemical property of water and microplankton community in the coastal area near Syowa Station, Antarctica, in midsummer of 1984.** 1. **Chemical property including chlorophyll a.**

Iwanami, K., et al, Tokyo. *National Institute of Polar Research. Memoirs*, Feb. 1986, Special issue No.40, p.1-14, Refs. p.12-14.

Futatsumachi, S., Taniguchi, A.

**Ice melting, Chlorophylls, Pack ice, Antarctica—Showa Station.**

Variation of chemical properties and chlorophyll a standing stock in the water column below fast ice were monitored in the coastal area north of Showa Station for 2 weeks in midsummer of 1984. Because the ice was continuously melting, the surface water was diluted to a greater extent and isolated from underlying waters by a well-defined pycnocline. Nitrate and nitrite were rapidly and completely depleted from the surface water. Silicate was also removed rapidly but remained at a certain level. Phosphate and ammonium were replenished by excretion of larger animals, such as seals. Despite a considerable amount of nutrients, chlorophyll a decreased in the surface water. Excess dilution with ice melted water is likely to be detrimental to most phytoplankters. During these variations in the surface layer, the chlorophyll maximum was formed in the subsurface layer and shallower depths. (Auth.)

## 40-4218

**Sedimentation of microalgae under the antarctic fast ice in summer.**

Sasaki, H., et al, Tokyo. *National Institute of Polar Research. Memoirs*, Feb. 1986, Special issue No.40, p.45-55, 18 refs.

Hoshiai, T.

**Pack ice, Cryobiology, Microbiology, Algae, Sedimentation, Antarctica—Showa Station.**

The development of ice algae and phytoplankton, and their sedimentation processes were studied in the antarctic ice-covered sea near Showa Station in the austral spring and summer 1982-83. The chlorophyll a concentration of ice algae markedly increased from Sep. to Dec., reaching the maximum of > 300 mg/cu m in the ice algal bloom, and decreased abruptly in Jan. Phytoplankton chlorophyll a levels in the water column under the ice were low until Dec. but increased in Jan. (> 2 mg/cu m). Changes in sedimentation rates of sinking particles showed that large ice algal aggregates which were the major component during the ice algal bloom detached from the undersurface of the ice and sank down to the sea floor. Sedimentation fluxes of ice algal detritus were high in the ice algal bloom. The microalgae have a high probability of reaching the bottom during the summer growing season and become an important food for benthic organisms. (Auth. mod.)

## 40-4219

**Nannoplankton flora in the southern ocean, with special reference to siliceous varieties.**

Nishida, S., Tokyo. *National Institute of Polar Research. Memoirs*, Feb. 1986, Special issue No.40, p.56-68, 11 refs.

**Pack ice, Microbiology, Algae.**

In the southern ocean four nannoplankton assemblages were defined: subpolar, subantarctic, antarctic and circum-antarctic pack ice assemblages. The former three assemblages are composed mainly of calcareous nannoplankton, dominated by varieties of Coccolithophyceae. The last assemblage is dominated by a great number of siliceous microorganisms. The present siliceous microorganisms are yet unnamed and their taxonomical position is not well known. But their restricted distribution and large number of individuals in the off pack ice zone must be evaluated in polar sea ecosystems. (Auth. mod.)

## 40-4220

**Morphology and distribution of heterotrophic protists along 75°E in the southern ocean.**

Hara, S., et al, Tokyo. *National Institute of Polar Research. Memoirs*, Feb. 1986, Special issue No.40, p.69-80, 22 refs.

**Pack ice, Microbiology, Algae.**

Naked amoebae and choanoflagellates were the dominant heterotrophic protists in the Indian Ocean area investigated. The total cell volume of heterotrophic protists was larger at 50 m than at 0 m. The ratio of the cell volume of heterotrophic protists to the total cell volume (heterotrophic and autotrophic protists) was found to be in reverse correlation to the total cell volume in the 0 m layer. Species of choanoflagellates invested in siliceous loricae (Acanthocidae) were distributed only in the 0 m layer. Choanoflagellates invested in organic sheaths (Salpingocidae), naked choanoflagellates (Codonosigidae) and amoebae were distributed in both 0 and 50 m layers. The importance of choanoflagellates and amoebae in the detritus food chain in the pelagic antarctic ecosystem is discussed. (Auth. mod.)

40-4221

**Siliceous cysts from Kita-no-seto Strait, north of Syowa Station, Antarctica.**

Takahashi, E., et al, Tokyo. *National Institute of Polar Research. Memoirs*, Feb. 1986, Special issue No.40, p.84-91, Refs. p.90-91.

Watanabe, K., Satoh, H.

**Plankton, Microbiology, Algae, Sea ice, Pack ice.**

Siliceous cysts of 29 different morphological shapes were observed in the sea ice and sea water at the Kita-no-seto Strait, north of Showa Station. Twenty species were newly discovered in the antarctic waters. Cysts collected were in the size range of 3 to 10 micron. They are tentatively classified into four groups based on their morphological characteristics: Sphaerica, Ovoides, Hemisphaerica, and Tri/quadrifidra. Twelve cysts representative of each group and a cyst of *Paraphysomonas imperforata* n.sp. are described. Cysts appeared from Mar. to May, and in Dec. and the species diversity was highest in Dec., with 18 species. Among 29 species, 20 appeared in the sea ice, 8 in both sea ice and sea water, and 1 in sea water only. Their main habitat were the brine pockets and channels of the sea ice. (Auth.)

40-4222

**Changes in the condition of the surface water and distribution of *Euphausia superba* Dana between 65E and 75E in the antarctic ocean during the pack ice melting season.**

Naganobu, M., et al, Tokyo. *National Institute of Polar Research. Memoirs*, Feb. 1986, Special issue No.40, p.187-190, Extended abstract. 3 refs.

Komaki, Y.

**Pack ice, Ice edge.**

Surface water temperatures were negative during Dec., and rose over 0.5 C during Jan.-Feb. when the pack ice receded southwards. The eastward flow is dominant in the area north of 65 S, and to the south the flow has a gentle meander. The catch of *E. superba* showed large quantities near the pack ice edge in Dec., and some abundance near 63 S and south of 76 S in Jan.-Feb. Apart from *E. superba*, other varieties of Euphausiacea, such as *Thysanoessa macrura*, *E. tricantha*, and *E. crystallorophias* were also found.

40-4223

**Recent New Zealand marine research in the Ross Sea Sector of Antarctica.**

Knox, G.A., Tokyo. *National Institute of Polar Research. Memoirs*, Feb. 1986, Special issue No.40, p.345-363, Refs. p.362-363.

**Sea ice, Ice cover effect, Algae, Plankton, Antarctica—McMurdo Sound, Antarctica—McMurdo Ice Shelf.**

In the summer of 1970-71 a marine biological program was initiated at Cape Bird, including a preliminary general benthic survey, a quantitative sampling of the bottom in depths between 25 and 200 m, and an oceanographic and sampling program to a depth of 200 m. The quantitative sampling formed part of a study of marine benthic diversity along a latitudinal gradient from Stewart I. to Cape Bird. The results of this study are briefly discussed. Other studies carried out at Cape Bird are listed. In the summer of 1976-77, the focus of the marine work shifted to White Island. The objectives of this study were to monitor water column processes and to investigate summer plankton beneath the shelf, to determine the fish population beneath the shelf and to investigate its food supply, to sample the benthic community and to study the tide-crack production cycle. Results of these studies carried out over two seasons are briefly discussed, as are investigations carried out in the summer of 1979-80 through the sea-ice at the edge of the McMurdo Ice Shelf. Physical, chemical and biological parameters were measured weekly at six depths to 500 m. Based on the above investigations and work carried out by other investigators a scheme of the circulation patterns beneath the McMurdo Ice Shelf is advanced. (Auth. mod.)

40-4224

**Ergonomic and research applications in the development of an Arctic shiphandling simulator. Summary report.**

Donderi, D.C., et al, Transport Canada. *Transportation Development Centre. Report*, Feb. 1985, TP 5622E, TDC 4935-4936, 17p., With French summary. Ostry, D.J.

**Ice navigation, Remote sensing, Ships, Bridges, Ports, Safety, Design, Equipment.**

40-4225

**USACRREL's snow, ice, and frozen ground research at the Sleepers River Research Watershed.**

Pangburn, T., et al, MP 2071, Eastern Snow Conference, Washington, D.C., June 7-8, 1984. *Proceedings*, 1984, p.229-240, 25 refs.

McKim, H.L.

**Snow hydrology, Ice surveys, Frozen ground physics, Snow water equivalent, Runoff forecasting, Watersheds, Models, Temperature effects.**

The Sleepers River Research Watershed in Danville, Vermont, has one of the longest historical data bases for a cold regions area. NOAA/NWS have been conducting research in snow hydrology at the watershed for the past 24 years; CRREL has been involved for the past 6 years. CRREL's major research involves: 1) developing and testing a sensor that will measure

the water equivalent of snow in near real time, and 2) modifying existing hydrologic models to accept remotely obtained data on snow, ice, and frozen ground.

40-4226

**Time-lapse thermography: a unique electronic imaging application.**

Marshall, S.J., et al, MP 2103, International Electronic Imaging Exposition and Conference, Boston, MA, Sep. 11-13, 1984, 1984, p.84-88, 21 refs.

Munis, R.H.

**Surface temperature, Infrared photography, Electronic equipment, Lasers.**

A new technique has been recently introduced that combines time-lapse video techniques with those of thermal imaging. As a result, dynamic thermal events can be recorded in fast or slow motion and played back at expanded or compressed rates compatible with digital enhancement and analysis techniques. The enhancement techniques are used to improve the capability for pattern recognition as well as for the rapid extraction of maximum, minimum and average surface temperatures. The equipment necessary to assemble and operate a typical time-lapse thermal imaging system is described along with some examples of practical and research applications. The capabilities, limitations, and future possibilities are also discussed.

40-4227

**Cryo-hydrogeological investigations. (Kriogidrogeologicheskie issledovaniia).**

Anisimova, N.P., ed, Yakutsk, 1985, 172p., In Russian. For individual papers see 40-4228 through 40-4243. Refs. passim.

**Swamps, Mapping, Land reclamation, Permafrost hydrology, Permafrost distribution, Mining, Permafrost origin, Spaceborne photography, Permafrost transformation, Drainage, River basins, Artesian water, Drill core analysis, Taliks, Valleys.**

40-4228

**Formation and distribution of suprapermafrost ground water in the Yakut ASSR. (O formirovani i rasprostraneni nadmerzlotnykh vod na territorii IAKutskoi ASSR).**

Shepelev, V.V., Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.3-15, In Russian. 9 refs. **Permafrost hydrology, Suprapermafrost ground water, Permafrost beneath structures, Hydraulic structures, Water chemistry, Classifications.**

40-4229

**Naled component of ground water runoff in the Arctic, Polar and Subpolar Urals. (Nalednaia sostavliashchaisia podzemnogo stoka na Zapoliarnom, P.urnom i Pripoliarnom Urale).**

Oberman, N.G., Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.15-24, In Russian. 14 refs.

**Alpine landscapes, Naleds, Permafrost hydrology, Spaceborne photography, Remote sensing, Permafrost hydrology, Mapping.**

40-4230

**Unfrozen brines in coastal areas of the Kara and Pechora seas. (Kriogalinnye vody (kriopegi) na poberezh'akh Karskogo i Pechorskogo morei).**

Orlianskii, V.V., Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.24-34, In Russian. 10 refs.

**Shores, Sea water freezing, Frozen ground chemistry, Unfrozen water content, Brines, Polar regions, Chemical composition.**

40-4231

**Formation of ground water in Quaternary deposits, the Lena-Vilyuy artesian basin. (Osobennosti formirovaniia podzemnykh vod chetvertichnykh otlozhenii Leno-Viliuiskogo artzianskogo basseina).**

Piguzova, V.M., et al, Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.34-43, In Russian. 10 refs.

**River basins, Artesian water, Permafrost origin, Quaternary deposits, Permafrost hydrology, Taliks, Suprapermafrost ground water.**

40-4232

**Formation and regime of Central Yakutia taliks on slopes. (Uslovia formirovaniia i rezhim sklonovykh talikov v Tsentral'noi IAKutii).**

Boltsov, A.V., Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.44-55, In Russian. 9 refs.

**Permafrost hydrology, Taliks, Origin.**

40-4233

**Conditions for the replenishment of sublacustrine taliks near water intakes. (Ob usloviakh vospolneniia podozernogo talika v zone delstvuiushchego vodozabors).**

Fedorov, A.M., et al, Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.55-61, In Russian. 4 refs.

Lavrent'ev, A.A.

**Lakes, Permafrost beneath lakes, Taliks, Water intakes, Water reserves.**

40-4234

**Sounding sub-lacustrine taliks according to the technique of transient processes. (Zondirovaniie podozernykh talikov metodom perekhodnykh protsessov).**

Nim, I.U.A., et al, Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.61-71, In Russian. 9 refs.

Fedorov, A.M., Popov, A.R.

**Lakes, Permafrost beneath lakes, Taliks, Sounding, Remote sensing.**

40-4235

**Frost mounds in the Imachi River valley. (Bugry puchenii doliny r. Imachi).**

Samusenko, A.V., Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.71-78, In Russian. 4 refs.

**River basins, Permafrost hydrology, Permafrost distribution, Hydrothermal processes, Frost mounds, Naleds, Valleys, Underground cables.**

40-4236

**Cryogenic and hydrogeological peculiarities of the Omoloy depression. (Merzlotno-gidrogeologicheskie osobennosti Omoloi'skoi vpadiny).**

Kunitakii, V.V., et al, Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.78-94, In Russian. 15 refs.

Makarov, V.N.

**River basins, Lakes, Permafrost distribution, Taliks, Permafrost structure, Discontinuous permafrost.**

40-4237

**Chemical composition of ground ice layers and their relation to ground water. (Khimicheskii sostav plastovykh l'dov i ikh svyaz' s podzemnymi vodami).**

Kritskii, L.N., et al, Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.94-108, In Russian. 11 refs.

Anisimova, N.P.

**Ground ice, Permafrost structure, Ice structure, Suprapermafrost ground water, Permafrost hydrology, Water chemistry, Chemical composition.**

40-4238

**Salt regime of sands in the aeration zone in Central Yakutia. (Solevoi rezhim peskov zony aeratsii v Tsentral'noi IAKutii).**

Zhigalova, O.P., Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.109-116, In Russian. 6 refs.

**Plains, Permafrost depth, Sands, Aeration, Permafrost hydrology, Porosity, Salinity, Chemical composition.**

40-4239

**Hydrochemical characteristics of surface waters and ground ice in Central Yamal. (Gidrokhimicheskaiia kharakteristika poverkhnostnykh vod i podzemnykh l'dov Srednego IAmala).**

Kritskii, L.N., et al, Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.117-126, In Russian. 6 refs.

Chervova, E.I.

**Permafrost hydrology, Permafrost structure, Natural gas, Water chemistry, Ground ice, Surface waters, Ice composition.**

40-4240

**Cryo-hydrogeological processes related to human factors in the Korshunovskiy iron-ore deposit area.** (Kriogidrogeologicheskie protsessy svyazannye s tekhnogenezom (na primere Korshunovskogo zhelezorudnogo mestorozhdeniya)). Dem'ianovich, N.I., et al. Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.126-135, In Russian.

Pisarskii, B.I.

**Mining, Thermokarst, Permafrost depth, Permafrost hydrology, Permafrost transformation, Human factors, Hydrothermal processes.**

40-4241

**Hydrogeological studies in southern Yakutia for land reclamation by drainage.** (Gidrogeologicheskie issledovaniia dlia obosnovaniia osushitel'nykh melioratsii v Iuzhnoi Iakutii). Vdovin, I.U.I., Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.135-148, In Russian. 9 refs.

**Swamps, Land reclamation, Drainage, Permafrost depth, Peat, Permafrost hydrology, Organic soils, Subpermafrost ground water, Suprapermafrost ground water, Permafrost structure, Permeability, Artificial thawing.**

40-4242

**Thermal sagging and surface deformations during land reclamation in the Amga River valley.** (Termoprosadki i deformatsii poverkhnosti polia pri melioratsii v doline r. Amgi). Gavril'ev, P.P., Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.148-161, In Russian. 3 refs.

**Thermokarst, Land reclamation, Environmental impact, Swamps, Ice veins, Hydrothermal processes, Ice melting.**

40-4243

**Method of determining the origin of permafrost taking the Muostakh Island as an example.** (K metodike opredeleniia genezisa mnogoletnemerzlykh porod na primere o. Muostakh). Romanov, V.P., et al. Kriogidrogeologicheskie issledovaniia (Cryo-hydrogeological investigations) edited by N.P. Anisimova, Yakutsk, 1985, p.161-166, In Russian. 8 refs.

**Shores, Permafrost origin, Permafrost hydrology, Drill core analysis, Ground water, Chemical composition, Minerals, Migration, Brines, Laptev Sea.**

40-4244

**Recommendations for the design of overhead power lines for agricultural areas of the Yakut ASSR.** (Rekomendatsii po proektirovaniu vozdukhnykh linií elektropredachi dlia sel'skokhoziaistvennykh raionov Iakutskoi ASSR). Dordin, I.U.R., ed. Yakutsk, 1983, 100p., In Russian. 20 refs.

**Power lines, Electrical grounding, Permafrost beneath structures, Frost heave, Geological surveys, Engineering geology, Power line supports, Design, Environmental protection, Building codes.**

40-4245

**Index of papers presented at POAC 71, 73, 75, 77, 79, 81, 83, 85.**

Bruun, E., et al. Hørsholm, Danish Hydraulic Institute, 1985, 11 sections.

Bruun, P., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985.

**Ice physics, Bibliographies, Ice navigation, Ice loads, Offshore structures, Ice scoring, Ice mechanics, Meetings, Ocean environments.**

40-4246

**St. Lawrence River freeze-up forecast.** Foltyn, E.P., et al. *Journal of waterway, port, coastal and ocean engineering*, July 1986, 112(4), MP 2120, p.467-481, 16 refs.

Shen, H.T.

**Icebound rivers, Ice forecasting, River ice, Freezeup, Ice formation, Long range forecasting, Analysis (mathematics), Air temperature, Water temperature, Saint Lawrence River.**

In this study a method for making long-range forecasts of freeze-up dates in rivers is developed. The method requires the initial water temperature at an upstream station, the long-range air temperature forecast, the predicted mean flow velocity in the river reach, and water temperature response parameters. The water temperature response parameters can be either estimated from the surface heat exchange coefficient and the average flow depth or determined empirically from recorded air and

water temperature data. The method is applied to the St. Lawrence River between Kingston, Ontario, and Massena, New York, and is shown to be capable of forecasting the freeze-up data.

40-4247

**Bridge resting on an ice body at high altitude.** Vombatkere, S.G., *Journal of construction engineering and management*, June 1986, 112(2), p.287-296, 1 ref.

**Bridges, Ice (construction material), Cold weather construction, Mountains, Altitude, Roads, India.**

40-4248

**Hydrological isotope studies in the Schirmacher region, East Antarctica.** (Isotopenhydrologische Untersuchungen im Gebiet der Schirmacheroase (Ostantarktika)). Kowski, P., et al. *Isotopenpraxis*, 1986, 22(4), p.140-144, In German with English summary. 10 refs.

**Deuterium oxide ice, Glacial hydrology, Isotope analysis, Antarctica—Schirmacher Hills.**

This paper gives the first complete view of the isotope hydrology in the Schirmacher Hills region by means of studies of  $\delta D$  and  $\delta^{18}O$  variations. The precipitation is assumed to be condensed in a distance of about 100 km in a southeasterly direction at an ice sheet elevation between 1,000 m and 1,500 m a.s.l. The  $\delta D$  value studies of the shelf and inland ice have shown that both the basal zone of the inland ice and the ice shelf represent relicts of an assumed thicker Late Pleistocene ice cap in Dronning Maud Land. The main part of the glacier ice is composed of recent local precipitation. The isotope hydrological studies are also a contribution toward describing some characteristics of the high polar fresh-water lakes, ponds and pools under different limnological conditions. (Auth.)

40-4249

**Design of scientific compounds for Siberia. Scientific research centers, institutes, laboratories.** (Proektirovanie nauchnykh kompleksov Sibiri. Nauchno-issledovatel'skie tsentry, instituty, laboratorii). Savel'ev, B.A., ed. Moscow, Nauka, 1982, 144p., In Russian. For selected papers see 40-4250 and 40-4251. Refs. passim.

**Urban planning, Buildings, Permafrost beneath structures, Design.**

40-4250

**Specific features of the design of scientific research compounds for the Far North.** (Osobennosti proektirovaniia nauchno-issledovatel'skikh kompleksov dlia raionov Krai nego Severa). Aksekov, V., et al. Proektirovanie nauchnykh kompleksov Sibiri. Nauchno-issledovatel'skie tsentry, instituty, laboratorii (Design of scientific compounds for Siberia. Scientific research centers, institutes, laboratories) edited by B.A. Savel'ev, Moscow, Nauka, 1982, p.69-74, In Russian. 5 refs.

Molchanov, V.

**Urban planning, Buildings, Permafrost beneath structures, Design.**

40-4251

**Experience in designing, installation, adjustment and operation of heating and ventilation systems in the thermostatically controlled building of the Institute of Semiconductor Physics in the Novosibirsk Scientific Center.** (Opyt proektirovaniia, montazha, naladki i ekspluatatsii sistem otopeniia i ventilatsii termostatirovannogo korpusa Instituta Fiziki Poluprovodnikov v Novosibirskom nauchnom tsentre). Korzhavin, S., Proektirovanie nauchnykh kompleksov Sibiri. Nauchno-issledovatel'skie tsentry, instituty, laboratorii (Design of scientific compounds for Siberia. Scientific research centers, institutes, laboratories) edited by B.A. Savel'ev, Moscow, Nauka, 1982, p.89-93, In Russian.

**Buildings, Permafrost beneath structures, Design, Urban planning.**

40-4252

**Sub-temperate basal sliding.** Fowler, A.C., *Journal of glaciology*, 1986, 32(110), p.3-5, 10 refs., With French and German summaries.

**Glacier flow, Basal sliding, Glacier friction, Temperature effects, Ice sheets, Mathematical models.**

40-4253

**Ice on a non-rotating cylinder under conditions of high liquid water content in the air: I. Form and size of ice deposits.**

Launiainen, J., et al. *Journal of glaciology*, 1986, 32(110), p.6-11, 14 refs., With French and German summaries.

Lyyra, M.

**Ice accretion, Ice cover thickness, Wind tunnels, Humidity, Temperature effects, Wind velocity, Cylinders.**

40-4254

**Icing on a non-rotating cylinder under conditions of high liquid water content in the air: II. Heat transfer and rate of ice growth.**

Launiainen, J., et al. *Journal of glaciology*, 1986, 32(110), p.12-19, 18 refs., With French and German summaries.

Lyyra, M.

**Icing, Ice growth, Heat transfer, Wind tunnels, Analysis (mathematics), Humidity, Air temperature, Convection, Surface roughness, Cylinders.**

40-4255

**Subglacial hydrology for an ice sheet resting on a deformable aquifer.**

Shoemaker, E.M., *Journal of glaciology*, 1986, 32(110), p.20-30, 39 refs., With French and German summaries.

**Subglacial drainage, Glacial hydrology, Surface roughness, Ice sheets, Channels (waterways), Meltwater, Slope orientation, Friction, Analysis (mathematics).**

40-4256

**Drainage-basin characteristics of Nordaustlandet ice caps, Svalbard.**

Dowdeswell, J.A., *Journal of glaciology*, 1986, 32(110), p.31-38, 29 refs., With French and German summaries.

**Glacial hydrology, Ice surface, Glacier surges, Subglacial drainage, Radio echo soundings, Ice melting, Stresses, Remote sensing, Norway—Svalbard.**

40-4257

**Interpretation of radio echoes from Storglaciären, northern Sweden.**

Walford, M.E.R., et al. *Journal of glaciology*, 1986, 32(110), p.39-49, 19 refs., With French and German summaries.

**Glacial hydrology, Glacier beds, Radio echo soundings, Surface roughness, Sweden—Storglaciären.**

40-4258

**Assessment of mass-balance variations within a sparse stake network, Qamanarsûp sermia, West Greenland.**

Braithwaite, R.J., *Journal of glaciology*, 1986, 32(110), p.50-53, 7 refs., With French and German summaries.

**Glacier mass balance, Glacial hydrology, Markers, Accuracy, Greenland—Qamanarsûp.**

40-4259

**On the sea-ice regime of the Ross Sea, Antarctica.** Sturman, A.P., et al. *Journal of glaciology*, 1986, 32(110), p.54-59, 25 refs., With French and German summaries.

Anderson, M.R.

**Sea ice distribution, Ice conditions, Antarctica—Ross Sea.**

A study is made of the sea-ice regime of the Ross Sea using ESMR passive microwave data and supporting information. Inferences are made of the processes responsible for observed spatial and temporal sea-ice variations. Air flow appears to have a dominant influence on sea-ice distribution and movement, with oceanic circulation playing a more minor role. This is particularly so with coastal polynya development, where katabatic winds are important. It has been possible to identify broad areas of ice convergence and divergence by assimilating the rather limited oceanic and atmospheric information with observed sea-ice variations. In spite of some basic physical similarities of the Wedd. d Ross Seas, it is apparent that the major differences in their sea-ice regimes are due to the differing roles of oceanic and atmospheric circulation in each area. The Antarctic Peninsula plays a key role in these differences. Suggestions for further research are also considered. (Auth.)

40-4260

**Glacial erosion of a High Arctic valley.**

England, J., *Journal of glaciology*, 1986, 32(110), p.60-64, 31 refs., With French and German summaries.

**Glacial erosion, Meltwater, Glacier flow, Glacier beds, Valleys, Streams.**

40-4261

**Formation of fjord thresholds.**

Shoemaker, E.M., *Journal of glaciology*, 1986, 32(110), p.65-71, 18 refs., With French and German summaries.

**Glacial erosion, Glacier flow, Basal sliding, Velocity, Topographic features, Glacial deposits, Analysis (mathematics).**

- 40-4262**  
Effects of basal melting on the present flow of the Ross Ice Shelf, Antarctica.  
MacAyeal, D.R., et al, *Journal of glaciology*, 1986, 32(110), p.72-86, 53 refs., With French and German summaries.  
Thomas, R.H.  
Ice shelves, Basal sliding, Glacier flow, Ice models, Heat transfer, Glacier ablation, Ice melting, Antarctica—Ross Ice Shelf.  
A hybrid finite-element/finite-difference model of ice-shelf flow and heat transfer was used to investigate the effects of basal melting on the present observed flow of the Ross Ice Shelf. Two hypothetical basal melting scenarios are compared: zero melting everywhere and melting sufficient to balance any large-scale patterns of ice-shelf thickening that would otherwise occur. As a result of the temperature-dependent flow law, simulated ice-shelf velocities for the second scenario are reduced by up to 20% below those of the first. Results support the hypothesis that melting patterns presently maintain ice thickness in steady state and conform to patterns of oceanic circulation presently thought to ventilate the sub-ice cavity. Differences between the simulated and observed velocities are too large in the extreme south-eastern quarter of the ice shelf to permit verification of either basal melting scenario. These differences highlight the need to improve model boundary conditions at points where ice streams feed the ice shelf and where the ice shelf meets stagnant grounded ice. (Auth.)
- 40-4263**  
Detection of the depth-hoar layer in the snow-pack of the Arctic Coastal Plain of Alaska, U.S.A., using satellite data.  
Hall, D.K., et al, *Journal of glaciology*, 1986, 32(110), p.87-94, 21 refs., With French and German summaries.  
Chang, A.T.C., Foster, J.L.  
Ice detection, Depth hoar, Snow cover, Remote sensing, Metamorphism (snow), Snow ice interface, Vapor transfer, Ice cover thickness, Temperature gradients, Microwaves.
- 40-4264**  
Melt-water drainage pattern of composite glaciers.  
Thome, K.N., *Journal of glaciology*, 1986, 32(110), p.95-100, 11 refs., With French and German summaries.  
Glacial hydrology, Subglacial drainage, Meltwater, Glacier flow, Ice structure, Moraines, Channels (waterways), Glaciation, Glacier oscillation, Glacial rivers.
- 40-4265**  
Combined measurements of subglacial water pressure and surface velocity of Fieschergletscher, Switzerland: conclusions about drainage system and sliding mechanism.  
Iken, A., et al, *Journal of glaciology*, 1986, 32(110), p.101-119, 46 refs., With French and German summaries.  
Bindschadler, R.A.  
Subglacial drainage, Water pressure, Glacier flow, Basal sliding, Glacier surfaces, Flow rate, Snowmelt, Boreholes, Diurnal variations, Velocity, Glacier beds.
- 40-4266**  
On the mechanics of surging glaciers.  
McMeeking, R.M., et al, *Journal of glaciology*, 1986, 32(110), p.120-132, 23 refs., With French and German summaries.  
Johnson, R.E.  
Glacier surges, Ice mechanics, Basal sliding, Glacial hydrology, Compressive properties, Flow rate, Glacier flow, Shear flow, Glacier beds.
- 40-4267**  
Discharge of debris by Glaciar Hatunraja, Cordillera Blanca, Peru.  
Lliboutry, L., *Journal of glaciology*, 1986, 32(110), p.133, 2 refs., With French and German summaries.  
Glacial deposits, Glacier flow, Glacier thickness, Drill core analysis, Moraines, Talus.
- 40-4268**  
Spatial and temporal variation of electrical conductivity, pH, and water temperature in the Gornara, Switzerland.  
Metcalf, R.C., *Journal of glaciology*, 1986, 32(110), p.133-135, 10 refs., With French and German summaries.  
Electrical resistivity, Glacial rivers, Glacial hydrology, Meltwater, Water temperature, Water chemistry, Carbon dioxide.
- 40-4269**  
Snow watch '85.  
Kukla, G., ed, *Glaciological data*, Mar. 1986, GD-18, 276p., Refs. passim. For individual papers see 40-4270 through 40-4292.  
Hecht, A., ed, Barry, R.G., ed, Wiesnet, D., ed, Workshop on Snow Cover and its Role in the Climate System, College Park, MD, Oct. 1985.  
Snow cover distribution, Carbon dioxide, Climatic changes, Sea ice distribution, Remote sensing, Meetings, Atmospheric circulation, Albedo, Snow physics.
- 40-4270**  
Snow cover, cyclogenesis and cyclone trajectories.  
Walsh, J.E., et al, *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.23-35, 11 refs.  
Ross, B.  
Snow cover distribution, Atmospheric disturbances, Sea ice distribution, Forecasting, Statistical analysis, Meteorological data, Storms.
- 40-4271**  
Relationship between snow cover and atmospheric thermal and circulation anomalies.  
Dewey, K.F., et al, *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.37-53, 21 refs.  
Heim, R., Jr.  
Snow cover distribution, Atmospheric disturbances, Atmospheric pressure, Climatic factors, Temperature variations, Seasonal variations, Winter.
- 40-4272**  
Relationships between snow cover and temperature in the lower troposphere, general circulation in East Asia and precipitation in China.  
Zhao, Z., et al, *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.55-61, 8 refs.  
Wang, S.  
Snow cover distribution, Air temperature, Atmospheric circulation, Sea ice distribution, Precipitation (meteorology), Rain, Seasonal variations, China.
- 40-4273**  
Progression of regional snow melt.  
Robinson, D.A., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.63-72, 4 refs.  
Snowmelt, Albedo, Snow physics, Snow cover distribution, Vegetation factors, Remote sensing, Monitors.
- 40-4274**  
Soot from Arctic haze: radiation effects on the Arctic snowpack.  
Warren, S.G., et al, *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.73-77, 10 refs.  
Clarke, A.D.  
Aerosols, Snow cover, Air pollution, Haze, Solar radiation, Albedo, Grain size, Radiation balance, Smoke generators.
- 40-4275**  
Snow cover record in Eurasia.  
Foster, J., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.79-88, 16 refs.  
Snow cover distribution, Remote sensing, Meteorological data, Sea ice distribution, Forecasting, Winter, Europe, Asia.
- 40-4276**  
Distribution of snow cover in China.  
Li, P., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.89-95.  
Snow cover distribution, Snow depth, Climatic factors, Seasonal variations, Mountains, Meteorological data, China.
- 40-4277**  
Snow surveying in Canada.  
Goodison, B., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.97-103, 11 refs.  
Snow surveys, Snow cover distribution, Carbon dioxide, Snow depth, Snow water equivalent, Climatic factors, Canada.
- 40-4278**  
Snow cover in real time climate monitoring.  
Ropelewski, C.F., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.105-108.  
Snow cover distribution, Periodic variations, Climatic factors.
- 40-4279**  
Northern Hemisphere snow and ice chart of NOAA/NESDIS.  
Baldwin, T., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.109-113.  
Snow cover distribution, Ice cover, Remote sensing, Meteorological charts, Radiometry.
- 40-4280**  
NOAA satellite-derived snow cover data base: past, present and future.  
Matson, M., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.115-124, 8 refs.  
Snow cover distribution, Remote sensing, Ice cover, Sea ice distribution, Maps.
- 40-4281**  
Snow cover data: status and future prospects.  
Barry, R.G., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.127-139, 23 refs.  
Snow cover distribution, Remote sensing, Radiometry, Microwaves, Monitors, Computer applications, Variations.
- 40-4282**  
Comparison of Northern Hemisphere snow cover data sets.  
Robock, A., et al, *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.141-160, 5 refs.  
Scialdone, J.  
Snow cover distribution, Remote sensing, Meteorological charts, Maps, Climatology.
- 40-4283**  
Influence of snow structure variability on global snow depth measurement using microwave radiometry.  
Hall, D.K., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.161-171, 16 refs.  
Snow cover structure, Snow depth, Albedo, Solar radiation, Remote sensing, Water balance, Microwaves, Snow crystals, Radiometry.
- 40-4284**  
Retrieval of snow water equivalent from Nimbus-7 SMMR data.  
Hallikainen, M., et al, *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.173-179, 4 refs.  
Jouma, P.  
Snow water equivalent, Remote sensing, Radiometry, Microwaves, Brightness, Temperature effects, Grain size, Freeze thaw cycles.
- 40-4285**  
Nimbus-7 SMMR snow cover data.  
Chang, A.T.C., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.181-187, 13 refs.  
Snow cover distribution, Remote sensing, Maps, Cloud cover, Microwaves, Snow depth, Accuracy.
- 40-4286**  
Snow cover monitoring using microwave radiometry.  
Grody, N., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.189-192, 5 refs.  
Snow cover distribution, Remote sensing, Microwaves, Radiometry, Cloud cover, Monitors, Rain.
- 40-4287**  
Remote sensing of snow properties in mountainous terrain.  
Dozier, J., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.193-203, 12 refs.  
Snow optics, Albedo, Remote sensing, Snow impurities, Heat balance, Snowmelt, Mountains, Grain size, Water balance, Snow surface, Runoff.
- 40-4288**  
Effects of snow cover and tropical forcing on mid-latitude monthly mean circulation.  
Robock, A., et al, *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.207-214, 14 refs.  
Taus, J.W.  
Atmospheric circulation, Snow cover effect, Remote sensing, Air temperature, Solar radiation.

40-4289

Parameterization of snow albedo for climate models. Marshall, S., et al. *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.215-223, 5 refs.

Warren, S.G.

Snow optics, Albedo, Carbon dioxide, Climatic changes, Models, Grain size, Snow depth, Cloud cover.

40-4290

Modelling of a seasonal snowcover.

Morris, E.M., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.225-240, 15 refs. Snow cover distribution, Climatic changes, Carbon dioxide, Seasonal variations, Mathematical models, Snowmelt, Atmospheric circulation, Solar radiation, Air temperature.

40-4291

Characteristics of seasonal snow cover as simulated by GFDL climate models.

Broccoli, A., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.241-248, 11 refs. Snow cover distribution, Atmospheric circulation, Climatic changes, Models, Sea ice distribution, Seasonal variations, Snow water equivalent, Remote sensing, Air temperature.

40-4292

CO<sub>2</sub>-induced changes in seasonal snow cover simulated by the OSU coupled atmosphere-ocean general circulation model.

Schlesinger, M., *Glaciological data report*, Mar. 1986, GD-18, Snow watch '85. Edited by G. Kukla, A. Hecht, R.G. Barry and D. Wiesnet, p.249-270, 19 refs.

Snow cover distribution, Carbon dioxide, Atmospheric circulation, Climatic changes, Seasonal variations, Solar radiation, Models, Snow accumulation, Air temperature.

Two 20-year simulations are discussed, which have been performed with the OSU coupled atmosphere/ocean general circulation model that differ only in their CO<sub>2</sub> concentrations, to compare the CO<sub>2</sub>-induced changes in seasonal snow cover. In the Southern Hemisphere, the snow mass increases during summer and winter in the interior of Antarctica above the 400 m level and decreases around the Antarctic coastline. The simulated CO<sub>2</sub>-induced snow mass increase suggests that the monitoring of the snow accumulation rates in these locations might be of use in the identification of the projected climatic change, and in the attribution of this change to the increasing concentration of CO<sub>2</sub> and other trace gases.

40-4293

All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports. (Tezisy dokladov). Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985, Irkutsk-Chita, 1985, 170p., In Russian. For selected summaries see 40-4294 through 40-4313.

Pinneker, E.V., ed. Glacier ice, Placer mining, Metamorphism (snow), Naleds, Snow water equivalent, Water reserves, Permafrost hydrology, Taiga, Water supply, Human factors, Artesian water, Environmental protection.

40-4294

Cryogenic metamorphism of natural waters as a scientific trend in hydrogeological and hydrochemical investigations. (Kriogennaia metamorfizatsiia prirodnykh vod kak nauchnoe napravlenie v gidrogeologicheskikh i gidrokhimicheskikh issledovaniakh). Ivanov, A.V., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.19-20, In Russian. Ice formation, Metamorphism (snow), Glacier ice, Naleds, Models, Ground water, Freeze thaw cycles.

40-4295

Hydrogeological exploration with the use of the "Gidroscop" device in the extreme north of western Siberia. (Gidrogeologicheskie issledovaniia s primeneniem ustroystva "Gidroscop" na Krafnem Severe Zapadnoi Sibiri).

Semenov, A.G., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.20-21, In Russian.

Natural gas, Active layer, Permafrost hydrology, Exploration, Measuring instruments, Suprapermafrost ground water, Subpermafrost ground water.

40-4296

Ground waters and perennially frozen rocks in the intermontane basins of Altai Mountains. (Podzemnye vody i mnogoletnemerzlye porody mezhgornnykh vpadin Gornogo Altaia).

Kuskovskii, V.S., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.42-43, In Russian.

Soloboeva, L.A. Ground water, Permafrost hydrology, Artesian water, Water supply, Alpine landscapes.

40-4297

Methods of hydrogeochemical mapping for gold exploration in the low-mountain taiga of the Yenisey Range. (Metodika gidrogeokhimicheskogo kartirovaniia pri poiskakh zolotorudnykh mestorozhdenii v usloviakh nizkogornoi taigi iuga Eniseiskogo Kraia).

Koroleva, G.P., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.46-47, In Russian.

Permafrost, Placer mining, Taiga, Geochemistry, Surveys, Mapping.

40-4298

Water transfer and hydrogeological mapping in the northeastern USSR. (Ob osobennostiakh podzemnogo vodobmena i gidrogeologicheskogo kartirovaniia v gornykh raionakh Severo-Vostoka SSSR).

Shepelev, V.V., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.53-54, In Russian.

Permafrost distribution, Permafrost hydrology, Mapping, Alpine topography.

40-4299

Exploration and estimation of major fresh water reserves in Siberia and the Far East. (Osobennosti razvedki i otsenki ekspluatatsionnykh zapasov krupnykh mestorozhdenii presnykh podzemnykh vod Sibiri i Dal'nego Vostoka).

Jorevskii, B.V., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.64-65, In Russian.

Grodzenskii, V.D. Water reserves, Permafrost hydrology, Artesian water, Exploration, River basins. Permafrost distribution.

40-4300

Intraprapermafrost ground waters in the Daldyn-Alakit-skiy region, western Yakutia. (Mezhmerzlotnye karstovye vody Daldyn-Alakitskogo raiona (Zapadnaia Iakutiia)).

Filippov, A.G., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.70, In Russian.

Naleds, Permafrost hydrology, Ice volume, Thermokarst, Ice (water storage), River basins.

40-4301

Peculiarities of ground water exploration in coastal areas of water reservoirs in the Altai-Sayan folded area. (Osobennosti razvedki mestorozhdenii podzemnykh vod v beregovoi zone vodokhranilishch Altai-Saiaiskoi skladchatoi oblasti).

Kuskovskii, V.S., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.77-78, In Russian.

Lakes, Aerial surveys, Shores, Alpine landscapes, Permafrost distribution.

40-4302

Regularities of the formation, distribution and regime of ground waters in intermontane artesian basins of Transbaikalia. (Zakonomenosti formirovaniia, raspriostaneniia i rezhima podzemnykh vod v mezhgornnykh artzianskiikh basseinaikh Zabalkaiia).

Bakhlov, A.E., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.83-85, In Russian.

Artesian water, Exploration, Permafrost hydrology.

40-4303

Ground water preservation as an element of environmental protection. (Okhhrana podzemnykh vod kak element okhrany okruzhaiushchego sredy).

Tolstikhin, O.N., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.123, In Russian.

Zakharenkova, V.P. Permafrost hydrology, Environmental protection, Human factors, Water pollution.

40-4304

Ground water alimentation in the area of seasonally freezing rocks. (Osobennosti pitaniia podzemnykh vod v oblasti razvitiia sezonnoomerzlykh porod).

Bulatov, R.V., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.125-126, In Russian.

Dal'kov, M.P., Rabinovich, I.E. Soil freezing, Seasonal freeze thaw, Water pollution, Baykal Amur railroad, Water supply.

40-4305

Present state of routine observations and prospects for the development of ground water monitoring in the cryolithozone of western Siberia (the Tyumen' region). (Sostoianie sluzhby rezhimnykh nabludenii i perspektivy razvitiia monitoringa podzemnykh vod v kriolitozone Zapadnoi Sibiri (Tiimenskaia oblast')).

Matusevich, V.M., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.126-127, In Russian.

Smolentsev, I.U.K., Trofimov, A.V. Irrigation, Permafrost structure, Water intakes, Permafrost hydrology, Water supply.

40-4306

Estimating the natural protection of ground waters of cryo-hydrogeological structures in mountains. (Printsipy otsenki estestvennoi zashchishchennosti podzemnykh vod v kriidirogeologicheskikh strukturakh gornnykh oblastei).

Afanasenkov, V.E., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.130-131, In Russian.

Volkova, V.P., Romanovskii, N.N. Water pollution, Permafrost hydrology, Taliks, Alpine landscapes.

40-4307

Preservation of subpermafrost ground water in western Yakutia. [Ob okhrane podmerzlotnykh vod v Zapadnoi IAKutii]. Borisov, V.N., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.131-132, In Russian. Water supply, Subpermafrost ground water, Water pollution, Permafrost distribution, Brines.

40-4308

Compilation of combined geocryologic and hydrogeological maps of the Baykal Amur railroad construction zone. [Sostavlenie kompleksnykh merzlotno-gidrogeologicheskikh kart zony osvoeniia BAM]. Afanasenko, V.E., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.138-139, In Russian. Volkova, V.P. Permafrost beneath structures, Permafrost hydrology, Mapping, Permafrost depth, Permafrost thickness, Railroads.

40-4309

Hydrogeological justification for the evaluation of usable ground water reserves in permafrost areas. [Gidrogeologicheskoe obosnovanie otsenki ekspluatatsionnykh zapasov podzemnykh vod v raionakh mnogoletnei merzloty]. Sokolov, B.L., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.143-143, In Russian. Defkin, B.N., Kolotaev, V.N., Markov, M.L. Runoff, Permafrost hydrology, Water supply, Permafrost structure, Ground ice.

40-4310

Protection and rational use of ground water in the western section of BAM. [Okhrana i ratsional'noe ispol'zovanie podzemnykh vod na zapadnom uchastke BAM]. Blokhin, I.U.I., et al, Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.143-144, In Russian. Permafrost hydrology, Taliks, Thermokarst, Baykal Amur railroad, Water supply.

40-4311

Calculating the part of naturally consumed ground water and its reserves to be used for the formation of river ice covers in the cryolithozone, exemplified by the central part of the BAM zone. [Metodika rascheta chasti estestvennykh raskhodov i ekspluatatsionnykh zapasov podzemnykh vod, raskhoduiushchikhsia na obrazovanie ledianogo pokrova rek kriolitozony (na primere tsentral'noi chasti zony BAM)]. Markov, M.L., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.148-149, In Russian. Naleds, Permafrost hydrology, River ice, Ice volume, Ice cover thickness, Water reserves.

40-4312

Allowing for naleds when evaluating natural and usable reserves of ground water in Siberia and the Far East (taking the central BAM zone as an example). [Uchet naledel pri otsenke estestvennykh i ekspluatatsionnykh zapasov podzemnykh vod v raionakh Sibiri i Dal'nego Vostoka (na primere tsentral'noi chasti zony BAM)]. Defkin, B.N., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.149-150, In Russian. Ice (water storage), Naleds, Water reserves.

40-4313

Hydrogeological aspect of the BAM development zone in relation to the stimulation of above-ground and underground naleds. [Gidrogeologicheskii aspekt problemy osvoeniia zony BAM v svyazi s aktivizatsiei gruntovykh i podzemnykh naledel]. Poznanin, V.L., Vsesoiuznoe soveshchanie po podzemnym vodam Vostoka SSSR, 11th, Irkutsk-Chita, 1985. Tezisy dokladov (All-Union conference on ground waters of the Eastern USSR, 11th, Irkutsk-Chita, 1985. Summaries of the reports) edited by E.V. Pinneker, Irkutsk-Chita, 1985, p.150-151, In Russian. Naleds, Permafrost hydrology, Ice formation, Ground ice, Human factors, Surface drainage.

40-4314

Initiating boiling with ice. Apfel, R.E., et al, *Nature*, June 12, 1986, 321(6071), p.657, 2 refs. Day, R.L. Water, Heating, Ice crystals.

40-4315

Tip splitting without interfacial tension and dendritic growth patterns arising from molecular anisotropy. Nittmann, J., et al, *Nature*, June 12, 1986, 321(6071), p.663-668, 39 refs. Stanley, H.E.

Snowflakes, Dendritic ice, Ice crystal growth, Anisotropy.

40-4316

Effect of temperature on the properties of superplasticized concrete. Yamamoto, Y., et al, *American Concrete Institute Journal*, Jan.-Feb. 1986, 83(1), p.80-87, 13 refs. Kobayashi, S. Concrete, Concrete admixtures, Concrete freezing, Freeze thaw tests.

40-4317

Genesis of an imbricate push moraine, Höfðabrekkukjúll, Iceland. Humlum, O., *Journal of geology*, Mar. 1985, 93(2), p.185-195, Refs. p.194-195.

Glacier flow, Moraines, Iceland—Höfðabrekkukjúll.

40-4318

Caisson system protects well from deep ice scour. Hewlett, C., *Ocean industry*, Jan. 1986, 21(1), p.26-28. Ice scouring, Caissons, Drills.

40-4319

Laboratory duplication of surface scaling. Adkins, D.F., *Concrete international: design & construction*, Feb. 1986, 8(2), p.35-39, 6 refs. Freeze thaw tests, Concrete durability, Concrete freezing, Laboratory techniques.

40-4320

Failure of brittle solids containing small cracks under compressive stress states.

Ashby, M.F., et al, *Acta metallurgica*, Mar. 1986, 34(3), p.497-510, With French and German summaries. 18 refs.

Hallam, S.D.

Brittleness, Ice cracks, Crack propagation, Compressive properties.

40-4321

Failure of brittle porous solids under compressive stress states.

Sammis, C.G., et al, *Acta metallurgica*, Mar. 1986, 34(3), p.511-526, With French and German summaries. 9 refs.

Ashby, M.F.

Brittleness, Crack propagation, Ice cracks, Compressive properties.

40-4322

Glaciology—a primer on ice. Untersteiner, N., *Oceanus*, 1986, 29(1), p.18-23.

Glaciology, Ice.

40-4323

Sea ice and oceanographic conditions. Newbury, T., *Oceanus*, 1986, 29(1), p.24-30, 6 refs.

Sea ice, Ice conditions, Oceanography.

40-4324

Arctic ocean pollution. Alexander, V., *Oceanus*, 1986, 29(1), p.31-35.

Water pollution, Oil spills, Waste disposal.

40-4325

Arctic marine ecosystems. Dunbar, M.J., *Oceanus*, 1986, 29(1), p.36-40.

Ecosystems, Cryobiology, Polynyas, Ice edge.

40-4326

Arctic's role in climate. Baker, D.J., *Oceanus*, 1986, 29(1), p.41-46.

Ice sheets, Climatic changes.

40-4327

Arctic icebreakers: U.S., Canadian, and Soviet. Brigham, L.W., *Oceanus*, 1986, 29(1), p.47-58.

Icebreakers.

40-4328

MIZEX east: past operations and future plans. Horn, D.A., et al, *Oceanus*, 1986, 29(1), p.66-72, 3 refs.

Johnson, G.L.

Ice edge, Ecosystems, Cryobiology.

40-4329

Oceanographic frontal structure and biological production at an ice edge.

Niebauer, H.J., et al, *Continental shelf research*, 1985, 4(4), p.367-388, Refs. p.387-388.

Alexander, V.

Ice edge, Microbiology, Biomass.

40-4330

Preliminary observations of oxygen and carbon dioxide of the wintertime Bering Sea marginal ice zone. Chen, C.T.A., *Continental shelf research*, 1985, 4(4), p.465-483, Refs. p.481-483.

Ice edge, Sea water, Chemical composition, Biomass.

40-4331

Ice in the winter 1984/85 in the coastal area between the Ems and Trave rivers. [Der Eiswinter 1984/85 im deutschen Küstengebiet zwischen Ems und Trave]. Koslowski, G., *Deutsche hydrographische Zeitschrift*, 1985, 38(5), p.225-232, In German. 4 refs.

Ice conditions, Sea ice, Shores.

40-4332

Electron beam penetration and X-ray excitation depth in ice.

Oates, K., et al, *Micron and microscopica acta*, 1985, 16(1), p.1-4, 6 refs.

Potts, W.T.W.

Ice electrical properties, X ray analysis.

40-4333

Two-dimensional model of ice-VII to ice-VIII phase transition.

Miyazima, S., et al, *Progress of theoretical physics*, May 1985, 73(5), p.1268-1269, 8 refs.

Tanaka, T., McGurn, A.R. High pressure ice.

40-4334

Our changing northern climate. Bruce, J., et al, *Geos*, 1985, 14(1), p.1-6.

Hengeveld, H. Climatic changes, Ice sheets.

40-4335

Longest frontal moraine system of Eastern Canada. [Le système morainique frontal le plus long de l'Est du Canada].

Dubois, J.M., et al, *Geos*, 1985, 14(1), p.7-10, In French.

Dionne, J.C. Glacial geology, Moraines.

40-4336

Procedure for projecting and correlating ice-margin positions.

Fleisher, P.J., *Journal of geological education*, Sep. 1985, 33(4), p.237-245, 9 refs.

Ice edge, Mapping.

40-4337

Impulse radar sounding in Kuramosuke snow patch, central Japan.

Yamamoto, K., et al, *Seppyo*, Mar. 1986, 48(1), p.1-9, In Japanese with English summary. 9 refs.

Snow accumulation, Snowmelt, Radar echoes, Radio echo soundings, Ice cover thickness, Ice bottom surface.

40-4338

Symposium on the Snow of Hokuriku, Toyama, 15 October 1985. *Seppyo*, Mar. 1986, 48(1), p.11-48, In Japanese. Refs. passim.

Snow surveys, Snow cover distribution, Snow accumulation, Seasonal variations, Meetings.

40-4339

OTC '85 proceedings. Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985, 1985, 4 vols., Refs. passim.

For selected papers see 40-4340 through 40-4355.

Offshore structures, Offshore drilling, Ice loads, Ice solid interface, Ice mechanics, Meetings, Sea ice distribution, Ice conditions, Caissons.

## 40-4340

**Punching resistance of slabs and shells used for Arctic concrete platforms.**

Birdy, J.N., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.1, 1985, p.135-149, 10 refs.  
Bhula, D.N., Smith, J.R., Wicks, S.J.  
**Offshore structures, Concrete structures, Ice loads, Shear strength, Shear stress, Flexural strength, Offshore drilling, Design, Models, Platforms.**

## 40-4341

**Finite element modelling of the dynamic response of the icebreaker *Canmar Kigoriak* to ice ramming forces.**

Murry, M.A., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.1, 1985, p.423-437, 13 refs.  
Evensen, K., Ghoneim, G.A., Grinstead, J.  
**Ice loads, Icebreakers, Ice solid interface, Dynamic loads, Design, Ice pressure, Stresses.**

## 40-4342

**Molikpaq: an integrated mobile arctic drilling caisson.**

Hnatiuk, J., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.2, 1985, p.373-381, 6 refs.  
Felzien, E.E.  
**Ice loads, Offshore drilling, Caissons, Sea ice distribution, Ice conditions, Design, Beaufort Sea.**

## 40-4343

**Installation of the mobile arctic caisson molikpaq.**

Gizel, T.G., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.2, 1985, p.389-397, 3 refs.  
Thomson, R.A.A., Athmer, J.B.E.M.  
**Cold weather construction, Offshore structures, Caissons, Icebreakers, Artificial islands, Offshore drilling, Equipment, Beaufort Sea.**

## 40-4344

**Ice islands as hazards to Arctic offshore production structures.**

Sackinger, W.M., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.2, 1985, p.399-408, 37 refs.  
**Ice islands, Offshore structures, Ice shelves, Ice mechanics, Ice growth, Drift, Wind factors, Exploration, Canada—Northwest Territories—Ellesmere Island.**

## 40-4345

**JEFF(A) Arctic Logistics Demonstration Program.**

Stocking, W.B., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.2, 1985, p.409-416, 4 refs.  
Edwards, J.J.  
**Air cushion vehicles, Ice conditions, Cold weather operation, Logistics, Maintenance, Engineering, Transportation, Design, Visibility, Beaufort Sea.**

## 40-4346

**Operational experience with an Arctic structure: the caisson retained island.**

Comyn, M.J., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.2, 1985, p.417-424, 3 refs.  
Gregor, L.C.  
**Offshore structures, Offshore drilling, Caissons, Ice conditions, Ice loads, Design, Erosion, Protection, Ocean waves, Artificial islands.**

## 40-4347

**Beaufort Sea ice scour analysis using a computerized data base.**

Gilbert, G.R., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.3, 1985, p.111-118, 7 refs.  
Blasco, S., Stirbys, A.F., Lewis, C.F.M.  
**Ice scoring, Bottom topography, Ocean bottom, Pipelines, Echo sounding, Ice mechanics, Design, Computer applications, Sea ice distribution, Beaufort Sea.**

## 40-4348

**Probabilistic design criteria for Beaufort Sea structures: combining limited driving force and limit stress predictions.**

Kreider, J.R., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.4, 1985, p.291-301, 12 refs.  
Zahn, P.B., Chabot, L.G.  
**Ice loads, Offshore structures, Stresses, Ice mechanics, Ice conditions, Design criteria, Impact strength, Ice floes, Freezeup, Sea ice, Analysis (mathematics), Beaufort Sea.**

## 40-4349

**Ice force criteria for Bering Sea offshore loading terminals.**

Padron, D.V., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.4, 1985, p.303-312, 8 refs.  
Sackinger, W.M., Faeth, M.T.  
**Ice loads, Ice strength, Offshore structures, Ice conditions, Ice pressure, Pressure ridges, Oil storage, Bering Sea.**

## 40-4350

**Ice forces exerted on a conical structure in the Gulf of Bothnia.**

Mänttinen, M.P., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.4, 1985, p.313-320, 7 refs.  
Mustamäki, E.O.  
**Ice loads, Offshore structures, Pressure ridges, Ice cover thickness, Tests, Caissons.**

## 40-4351

**Experimental study on ice-structure interaction.**

Tsuchiya, M., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.4, 1985, p.321-327, 10 refs.  
**Ice loads, Offshore structures, Ice solid interface, Ice mechanics, Tests, Mathematical models, Ice strength, Strains.**

## 40-4352

**Sea ice indentation in the creeping mode.**

Chehayeb, F.S., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.4, 1985, p.329-341, 22 refs.  
Ting, S.K., Shyam Sunder, S., Connor, J.J.  
**Ice creep, Ice deformation, Offshore structures, Ice loads, Rheology, Stresses, Strains, Sea ice, Mathematical models, Viscoelastic materials.**

## 40-4353

**Constitutive modeling of sea ice.**

Chen, V.L., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.4, 1985, p.343-351, 23 refs.  
Chen, E.S., Vivatrat, V.  
**Ice models, Sea ice, Ice solid interface, Ice loads, Strains, Ice mechanics, Ice physics, Ice plasticity, Mathematical models.**

## 40-4354

**Characteristic ice floe movements as revealed by shore-based radars.**

Sonu, C.J., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.4, 1985, p.353-358, 7 refs.  
Aota, M.  
**Ice mechanics, Ice floes, Ice conditions, Velocity.**

## 40-4355

**Development of high-strength steel plates for Arctic use.**

Tagawa, H., et al, Offshore Technology Conference, 17th, Houston, Texas, May 6-9, 1985. OTC '85 proceedings. Vol.4, 1985, p.477-484, 5 refs.  
**Steel structures, Plates, Cold weather tests, Cold tolerance, Tensile properties, Strength, Microstructure, Chemical composition.**

## 40-4356

**Environmental data inventory for the antarctic area.**

U.S. Environmental Satellite, Data, and Information Service, Washington, D.C., May 1984, 53p.  
**Ice, Maps, Meteorological charts, Antarctica.**  
This is the revised, updated version of an antarctic environmental data inventory publication first issued in 1978. The purpose of publications in this series is to show in an easily understandable form the major types of environmental data available from the National Environmental Satellite, Data, and Information Service (NESDIS) of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. This publication provides information on the amounts, types, and distribution of NESDIS data holdings in the area from 50° S to the South Pole.

## 40-4357

**Freezing, maximum annual ice thickness and breakup of ice on the Finnish coast during 1830-1984.**

Leppäranta, M., et al, *Geophysica*, 1985, 21(2), p.87-104, 12 refs.  
Seinä, A.  
**Sea ice, Ice cover thickness, Ice breakup, Sea ice distribution, Finland.**

## 40-4358

**Oxygen budget of a perennially ice-covered antarctic lake.**

Wharton, R.A., Jr., et al, *Limnology and oceanography*, Mar. 1986, 31(2), p.437-443, 17 refs.  
McKay, C.P., Simmons, G.M., Jr., Parker, B.C.  
**Oxygen, Limnology, Photosynthesis, Ice cover effect, Antarctica—Hoare, Lake.**

A bulk O<sub>2</sub> budget for Lake Hoare is presented. Five years of seasonal data show the lake to be persistently supersaturated with O<sub>2</sub>. Oxygen is carried into the lake in glacial meltstreams and is left behind when this water is removed as ice by ablation and sublimation. A diffusive loss of O<sub>2</sub> from the lake through the summer moat is suggested. Measured values of the total O<sub>2</sub> in the water column indicate that the time scale of O<sub>2</sub> turnover is much longer than a year. Based on these results we suggest that the amount of O<sub>2</sub> in the water does not change significantly throughout the year and that the lake is also supersaturated with N<sub>2</sub>. (Auth.)

## 40-4359

**Occurrence of ice platelets at 250 m depth near the Filchner Ice Shelf and its significance for sea ice biology.**

Dieckmann, G., et al, *Deep-sea research*, 1986, 33(2), p.141-148, 23 refs.  
Rohardt, G., Hellmer, H., Kipfstuhl, J.  
**Ice formation, Underwater ice, Ice crystals, Antarctica—Filchner Ice Shelf.**

Large single-crystal ice platelets were collected at 250 m depth in the vicinity of the Filchner Ice Shelf. They were probably formed in supercooled water streaming out from under the ice shelf as supported by hydrographic observations. The significance of large platelets rising from greater depths for the biological processes in sea ice along the Antarctic ice shelves is discussed. (Auth.)

## 40-4360

**Polar research by remote sensing.**

Robin, G. de Q., *Physics bulletin*, 1984, Vol.35, p.242-244, 7 refs.

## 40-4361

**Pack ice, Spacecraft, Radio echo soundings, Ice sheets, Ice surface, Remote sensing.**

The development of various techniques, such as passive microwave imagery, the radar altimeter, and radio echo sounding, as used in polar regions, is described. Because of the high cost of transport to polar regions, satellite remote sensing is considered to be an economic method of surveillance.

## 40-4361

**Long term fluctuations of ice cover in Lake Ladoga.**

Prokacheva, V.G., et al, *Soviet meteorology and hydrology*, 1985, No.10, p.72-78, Translated from *Meteorologiya i gidrologiya*. 11 refs.  
Borodulin, V.V.

**Lake ice, Ice cover thickness, Icebound lakes, Ice volume, Ice conditions, Statistical analysis, Climatic changes.**

## 40-4362

**State and prospects for development of methods of ice forecasts in seas of the Far East.**

Plotnikov, V.V., *Soviet meteorology and hydrology*, 1985, No.10, p.102-107, Translated from *Meteorologiya i gidrologiya*. 35 refs.  
**Sea ice distribution, Ice reporting, Ice forecasting, Ice conditions, Statistical analysis, Models.**

## 40-4363

**Evaporation from snow in conjunction with snow retention in agricultural fields.**

Delarov, D.A., et al, *Soviet meteorology and hydrology*, 1985, No.9, p.80-90, Translated from *Meteorologiya i gidrologiya*. 12 refs.  
Kaliuzhnyi, I.L., Shutov, V.A.  
**Snow evaporation, Snow cover distribution, Albedo, Snow retention, Pollution.**

## 40-4364

**Ice-forming properties of atmospheric aerosol.**

Khorguani, V.G., *Soviet meteorology and hydrology*, 1985, No.9, p.99-108, Translated from *Meteorologiya i gidrologiya*. 22 refs.  
**Aerosols, Ice formation, Condensation nuclei, Ice nuclei, Altitude, Variations.**

## 40-4365

**Selection of method of construction on permafrost soils.**

Belotserkovskaya, G.V., et al, *Soil mechanics and foundation engineering*, Nov.-Dec. 1985 (Pub. May 86), 22(6), p.205-209, Translated from *Osnovaniya, fundamente i mekhanika gruntov*. 7 refs.  
Ponomarev, V.D.  
**Buildings, Foundations, Permafrost beneath structures, Settlement (structural).**

## 40-4366

**New design of cast-in-place pile for soils prone to slump-type settlement.**

Pchelintsev, A.M., *Soil mechanics and foundation engineering*, Nov.-Dec. 1985 (Pub. May 86), 22(6), p.216-218, Translated from *Osnovaniya, fundamente i mekhanika gruntov*. 1 ref.  
**Foundations, Piles, Loess, Clay soils, Design.**

- 40-4367**  
Compaction of peat masses by weakly filtering soil sarcharges.  
Kononov, P.A., et al, *Soil mechanics and foundation engineering*, Nov.-Dec. 1985 (Pub. May 86), 22(6), p.231-238, Translated from *Osnovaniia, fundamenti i mekhanika gruntov*. 6 refs.  
Kulebiakin, I.N., Kushnir, S.I.A.  
Paludification, Peat, Organic soils, Soil compaction, Sands, Hydraulic fill, Foundations, Settlement (structural).
- 40-4368**  
Biological activity in some soils of the Chana basin.  
Kuz'min, V.A., et al, *Soviet soil science*, 1986, 18(1), p.36-43, Translated from *Pochvovedenie*. 10 refs.  
Makarova, A.P., Naprasnikova, E.V.  
Soil microbiology, Permafrost distribution, Permafrost beneath structures, Active layer, Baykal Amur railroad, Cryogenic soils.
- 40-4369**  
Reference base of soil classification.  
Shishov, L.L., et al, *Soviet soil science*, 1986, 18(1), p.44-57, Translated from *Pochvovedenie*. 31 refs.  
Rozhkov, V.A., Stolbov, V.S.  
Soil classification, Tundra, Taiga, Arctic landscapes, Podsol, Peat, Forest soils, Organic soils, Saline soils.
- 40-4370**  
Physical parameters of climate of USSR soils: classification and quantitative estimation.  
Dimo, V.N., *Soviet soil science*, 1986, 18(1), p.66-77, Translated from *Pochvovedenie*. 15 refs.  
Soil physics, Soil classification, Cryogenic soils, Heat transfer, Soil water migration, Microclimatology, Soil temperature, Mapping.
- 40-4371**  
Description of loamy gley-podzolic soils in the northern taiga of the European USSR.  
Vitt, V.S., *Soviet soil science*, July-Aug. 1985, No.4, p.1-13, Translated from *Pochvovedenie*. 22 refs.  
Organic soils, Cryogenic soils, Forest soils, Peat, Podsol, Taiga, Paludification, Minerals, Soil profiles.
- 40-4372**  
Cryogenic taiga soils of northeastern Asia.  
Naumov, E.M., et al, *Soviet soil science*, July-Aug. 1985, No.4, p.14-25, Translated from *Pochvovedenie*. 21 refs.  
Tursina, T.V., Verba, M.N.  
Cryogenic soils, Taiga, Polygonal topography, Microrelief, Soil structure.
- 40-4373**  
Interception of snow by the forest canopy.  
Kolesov, A.F., *Soviet soil science*, July-Aug. 1985, No.4, p.123-126, Translated from *Pochvovedenie*. 5 refs.  
Snow retention, Forest canopy, Snow surveys, Snow cover distribution.
- 40-4374**  
Some fundamental questions of the contact interaction of materials with snow and ice.  
Ivoshin, V.A., et al, *Soviet journal of friction and wear*, 1985, 6(3), p.78-83, Translated from *Trenie i iznos*. 18 refs.  
Tiunina, E.L., Cherskii, I.N.  
Metal ice friction, Metal snow friction, Polymers, Tests.
- 40-4375**  
Damming the Volga channel at the Cheboksary hydroelectric station.  
Erakhtin, B.M., *Hydrotechnical construction*, Oct. 1984 (Pub. Apr. 85), 18(10), p.463-472, Translated from *Gidrotekhnicheskoe stroitel'stvo*.  
River ice, Ice jams, Hydraulic structures, Dams.
- 40-4376**  
Improvement of the mechanical equipment of river navigation structures.  
Startsev, A.M., et al, *Hydrotechnical construction*, Oct. 1985 (Pub. Apr. 86), 19(10), p.521-526, Translated from *Gidrotekhnicheskoe stroitel'stvo*. 3 refs.  
Khudiakov, I.A., Levashova, A.F.  
Hydraulic structures, Sluices (hydraulic engineering), Cold weather operation, Ice removal.
- 40-4377**  
Low temperature high-pressure optical chamber.  
Shchanov, M.F., et al, *Instruments and experimental techniques*, Jul.-Aug. 1985 (Pub. Feb. 86), 28(4) part 2, p.974-976, Translated from *Pribory i tekhnika eksperimenta*. 10 refs.  
Meletov, K.P., Petrovskii, V.A.  
Cold chambers, High pressure tests, Equipment.
- 40-4378**  
Calorimeter with dismountable seal for low-temperature research.  
Naumov, V.N., et al, *Instruments and experimental techniques*, Sep.-Oct. 1985 (Pub. Apr. 86), 28(5) part 2, p.1194-1199, Translated from *Pribory i tekhnika eksperimenta*. 9 refs.  
Nogteva, V.V.  
Low temperature research, Calorimeters.
- 40-4379**  
Circulating cryostat for diffractometer for structure research at temperatures of 4.2-300 K.  
Bulatov, A.S., et al, *Instruments and experimental techniques*, Sep.-Oct. 1985 (Pub. Apr. 86), 28(5) part 2, p.1218-1220, Translated from *Pribory i tekhnika eksperimenta*. 2 refs.  
Dolzhenko, V.F.  
Low temperature research, Diffractometers, Cryostats, X ray diffraction, Crystals.
- 40-4380**  
Thermoelectric attachment to UT-15 thermostat to obtain temperatures below zero C.  
Ponov, N.P., et al, *Instruments and experimental techniques*, Sep.-Oct. 1985 (Pub. Apr. 86), 28(5) part 2, p.1235-1237, Translated from *Pribory i tekhnika eksperimenta*. 5 refs.  
Demenev, A.E.  
Low temperature tests, Thermostats.
- 40-4381**  
Preservation of northern ecosystems and new types of construction techniques. (Okhrana severnykh ekosistem i novye stroitel'nye tekhnologii).  
Novikov, I.P., *Stroitel'stvo truboprovodov*, May 1986, No.5, p.22-23, In Russian.  
Ice roads, Environmental protection, Snow roads, Design.
- 40-4382**  
Analysis of the environmental impact of pipeline testing for hermetic sealing. (Analiz posledstviy naru-sheniia okruzhaiushchei sredy pri ispytaniakh truboprovodov na gernetichnost').  
Maksimova, V.P., et al, *Stroitel'stvo truboprovodov*, May 1986, No.5, p.23, In Russian.  
Orlov, V.S.  
Gas pipelines, Environmental impact, Permafrost beneath structures, Tests, Soils, Vegetation.
- 40-4383**  
Mechanized laying of electric-power cables. (Mekhanizirovannaiia prokladka elektrosilovogo kabelia).  
Matushenko, O.P., et al, *Mekhanizatsiia stroitel'stv*, June 1986, No.6, p.6-7, In Russian.  
Electric power, Cables (power lines), Cold weather construction, Construction equipment.
- 40-4384**  
Technology of cooling and freezing of ground. (Tekhnika okhlazhdeniia i zamorazhivaniia grunta).  
Roshchupkin, D.V., *Mekhanizatsiia stroitel'stva*, June 1986, No.6, p.14-15, In Russian.  
Soil freezing, Artificial freezing, Construction equipment, Frost penetration, Soil water migration, Frozen ground strength, Thermopiles.
- 40-4385**  
Improving the technology and organization of power-net construction in northern West Siberia and the Komi ASSR. (Nekotorye voprosy sovershenstvovaniia tekhnologii i organizatsii elektrossetevogo stroitel'stva na severe Zapadnoi Sibiri i v Komi ASSR).  
Piliutik, V.N., *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.9-10, In Russian.  
Electric power, Power line supports, Ice loads, Power lines, Power line icing, Permafrost beneath structures.
- 40-4386**  
Designing electrical networks for permafrost conditions. (Proektirovanie elektrossetevykh ob'ektov v usloviakh vechnot merzloty).  
Volkov, A.N., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.11-13, In Russian.  
Volkov, G.I.  
Electric power, Power line icing, Power line supports, Power lines, Ice loads, Permafrost beneath structures.
- 40-4387**  
High-speed drilling of boreholes for power line support foundations under difficult conditions. (Perspektivnyi sposob skorostnoi prokhodki skvazhin pod fundamenti opor VL v tiazhelykh gruntovykh usloviakh).  
Tokhunts, R.D., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.13-16, In Russian. 5 refs.  
Shchepetkin, A.N., Eremenko, V.V., Elenbogen, G.N.  
Power line supports, Permafrost beneath structures, Drilling, Foundations, Piles.
- 40-4388**  
Construction of foundations for power line supports in permafrost. (Soozuzhenie fundamentov opor VL v vechnomerzlykh gruntakh).  
Smirnov, V.N., *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.17-18, In Russian. 3 refs.  
Foundations, Power line supports, Permafrost beneath structures.
- 40-4389**  
Combined piles for fastening power line supports in permafrost. (Primenenie kombinirovannykh svai dlia zakrepleniia opor VL v vechnomerzlykh gruntakh).  
Kuprin, V.M., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.18-20, In Russian.  
Ryzhkov, V.M.  
Foundations, Power line supports, Piles, Permafrost beneath structures.
- 40-4390**  
Methods of pile sinking into permafrost. (Ratsional'nye sposoby pogruzeniia svai v vechnomerzlye grunty).  
Targulian, I.U.O., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.20-21, In Russian.  
Piles, Power line supports, Pile driving, Foundations, Permafrost beneath structures.
- 40-4391**  
Surface foundations with anchors and power line supports with stabilizing system of braces. (Poverkhnostnye fundamenti s ankernym krepieniem i opory VL so stabiliziruiushchei sistemoi otiazhek).  
Pylae, E.L., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.22-25, In Russian. 2 refs.  
Pavlov, A.M., Lipkind, A.M., Zaitseva, E.L.  
Power line supports, Permafrost beneath structures, Foundations, Anchors.
- 40-4392**  
UZA-2 installations for tightening anchor screws. (Ustanovka UZA-2 dlia zavinchivaniia ankerov).  
Zhelezkov, V.N., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.25-26, In Russian. 3 refs.  
Chizhas, G.I.U.  
Anchors, Power line supports, Foundations, Permafrost beneath structures.
- 40-4393**  
Increasing the reliability of the 35-220 kv power lines in the Sakhalin power system. (Povyshenie nadezhnosti VL 35-220 kv v Sakhalinskoi energosisteme).  
Mikhailov, I.I., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.27-28, In Russian.  
Glushchenko, T.K., Popov, N.I., Kholodov, V.V.  
Power line supports, Power line icing, Ice loads.
- 40-4394**  
Results of testing screw anchors and piles in permafrost. (Rezultaty ispytaniy vintovykh ankerov i svai v vechnomerzlykh gruntakh).  
Petrov, O.L., *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.28-29, In Russian. 3 refs.  
Piles, Foundations, Power lines, Permafrost beneath structures, Bearing strength.
- 40-4395**  
Preventing frost heaving of the power line support foundations. (Meropriiata protiv vypuchivaniia fundamentov opor VL).  
Orlov, V.O., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.29-30, In Russian.  
Pchelintsev, A.M., Budanov, V.G., Iarkin, I.G.  
Power line supports, Foundations, Frost heave, Ground water, Drainage, Thermal insulation, Chemical ice prevention.
- 40-4396**  
Selection of optimal structural design and layout of hydroelectric power plants in the Far North. (K vyboru optimal'nykh konstruktivnykh sooruzhenii i komponovki GES na Kraenem Severe).  
Erakhtin, B.M., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.33-38, In Russian. 5 refs.  
Bogoslovskii, P.A., Frishter, I.U.I., Kogodovskii, O.A.  
Hydraulic structures, Earth dams, Permafrost beneath structures, Roads, Industrial buildings, Concrete structures.

40-4397

Field observation of the Kolyma hydroelectric power plant during construction period. (Naturnye nabliudeniiia za plotinof Kolymaskoi GES v stroitel'nyi period).

Avdeev, V.A., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.39-43, In Russian. 7 refs.

Earth dams, Permafrost beneath structures, Earth fills, Spillways, Rock fills, Electric power.

40-4398

Studying and improving the structure and technology of erecting the right-bank dam of the Kureyskaya hydroelectric power plant built on a weak foundation. (Issledovaniia i sovershenstvovanie konstruktssii i tekhnologii vozvedeniia pravoberezhnoi plotiny Kureyskoi GES na slabom osnovanii).

Bianov, G.F., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.43-46, In Russian. 4 refs.

Peat, Earth dams, Foundations, Clay soils, Slope stability, Soil compaction, Organic soils.

40-4399

Thermal regime of the longitudinal cofferdam of the pit of basic structures of the Vilyuy Hydroelectric Power-Plant-III. (Termicheski rezhim prodol'noi peremyschki kotlovana osnovnykh sooruzhenii Viliyskoi GES-III).

Arsen'eva, A.P., et al, *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.46-47, In Russian. 1 ref.

Fevralev, A.V. Hydraulic structures, Earth dams, Clays, Permafrost beneath structures, Thermal regime.

40-4400

Conditions of the formation of temperature and filtration regimes in river-bed dam of the Ust'-Khanay Hydroelectric Power Plant during its operation. (Uslovia formirovaniia temperaturynogo i fil'tratsionnogo rezhimov v ruslovof plotine Ust'-Khanatskoi GES pri ee ekspluatatsii).

Mukhetdinov, N.A., *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.47-50, In Russian. 4 refs.

Seepage, Hydraulic structures, Earth dams, Thermal regime, Ground thawing, Heat transfer, Charts.

40-4401

Construction of ice-containing earth dams for flood protection in permafrost regions. (Zashchita territorii ot zatopeniia i dogruntovmi damami v ralonakh rasprostraneniia mnogoletnemerzlykh porod).

Gogolev, E.S., *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.50-51, In Russian. 2 refs.

Ice (construction material), Earth dams, Earth fills, Rock fills, Permafrost beneath structures.

40-4402

Using cellular and dense silica concretes in the Far North. (Opyt proizvodstva iacheistykh i plotnykh silikatnykh betonov v usloviakh Kralnego Severa).

Riabov, A.P., *Energeticheskoe stroitel'stvo*, May 1986, No.5, p.63-64, In Russian.

Cements, Concrete structures, Cellular concretes, Concrete aggregates, Transportation, Cost analysis.

40-4403

Two-step filtering stations for river waters of northern regions. (Dvukhstupenchatof fil'trovaniie dlia ochistki rek severnykh ralonov).

Neparidze, G.G., et al, *Vodosnabzhenie i sanitarnaia tekhnika*, 1986, No.2, p.4-5, In Russian. 2 refs.

Groshev, S.K., Trofimova, R.A. River water, Water treatment, Filters, Water supply.

40-4404

Clearing the highly colored natural waters in northern regions. (Ochistka vysokotsvetnykh vod severnykh regionov strany).

Draginskii, V.L., et al, *Vodosnabzhenie i sanitarnaia tekhnika*, 1986, No.2, p.6-8, In Russian. 2 refs.

Water supply, Water treatment, River water, Lake water.

40-4405

Ground water purification stations in the Tyumen' region. (Stantsii ochistki podzemnykh vod v Tyumenskoi oblasti).

Artemenok, N.D., *Vodosnabzhenie i sanitarnaia tekhnika*, 1986, No.2, p.11-12, In Russian. 4 refs.

Water treatment, Ground water, Water supply, Water pollution, Petroleum products.

40-4406

Sewage treatment in the Far North. (Ochistka bytovykh stochnykh vod na Kralnem Severe).

Mochalov, I.P., *Vodosnabzhenie i sanitarnaia tekhnika*, 1986, No.2, p.18-19, In Russian. 5 refs.

Water treatment, Sanitary engineering, Sewage treatment, Permafrost hydrology.

40-4407

Floating water intakes and siphon water lines under severe climatic conditions. (Plavuchii vodopriemnik i sifonnyi vodovod v surovom klimate).

Bukatnikov, V.D., et al, *Vodosnabzhenie i sanitarnaia tekhnika*, 1986, No.2, p.19-20, In Russian. 2 refs.

Maul', V.K. Water supply, Water intakes, Water pipes, Cold weather performance, Permafrost beneath structures.

40-4408

Electric warming of steel pipelines. (Elektrootogrev stal'nykh truboprovodov).

Chubov, V.A., *Vodosnabzhenie i sanitarnaia tekhnika*, 1985, No.4, p.23-26, In Russian. 4 refs.

Pipelines, Electric heating, Pipeline freezing, Steel, Water supply, Utilities.

40-4409

New antifreeze admixtures for combined winter bricklaying. (Primenenie novykh protivomoroznykh dobavok v zimnel kombinirovannoi kladke).

Ovcharov, V.I., *Zhilishchnoe stroitel'stvo*, Apr. 1986, No.4, p.19-21, In Russian.

Winter concreting, Greeting, Bricks, Linings, Concrete admixtures, Frost resistance.

40-4410

Block-section method in urban planning of the North. (Blochno-sektsionnyi metod v gradostroitel'stve Severa).

IAkushevskii, L.E., *Zhilishchnoe stroitel'stvo*, Jan. 1986, No.1, p.23-25, In Russian.

Walls, Wind factors, Snowdrifts, Protection, Urban planning, Microclimatology, Arctic landscapes.

40-4411

Types of residential settlements in northern cities and villages. (Tipy zhilykh obrazovani v severnykh gorodakh i poselkakh).

Novotel'nova, Z.G., *Zhilishchnoe stroitel'stvo*, Sep. 1985, No.9, p.17-18, In Russian.

Urban planning, Residential buildings, Subarctic landscapes, Permafrost beneath buildings, Design.

40-4412

Lightweight concrete for external walls in Noril'sk. (Legkobetonnye paneli naruzhnykh sten v usloviakh Noril'ska).

Zlatinskaia, T.V., *Zhilishchnoe stroitel'stvo*, Aug. 1985, No.8, p.7-9, In Russian.

Frost resistance, Large panel buildings, Lightweight concretes, Panels, Permafrost beneath structures, Subarctic landscapes, Freeze thaw cycles.

40-4413

Strength of contact joints in large-panel buildings with weak seams, during their thawing. (Prochnost' kontaktnykh stykov v krupnopanel'nykh zdaniakh s maloprochnymi shvami pri ikh ottaivani).

Shapiro, G.A., et al, *Zhilishchnoe stroitel'stvo*, July 1985, No.7, p.26-28, In Russian.

Korchagin, O.P. Large panel buildings, Prefabrication Panels, Joints (junctions), Sealing, Grouting, Freeze thaw cycles, Strength.

40-4414

Industrial houses for the North. (Industrial'nye doma dlia Severa).

Ovchinnikova, N.P., *Zhilishchnoe stroitel'stvo*, Apr. 1985, No.4, p.12-14, In Russian.

Industrial buildings, Residential buildings, Paludification, Permafrost beneath structures, Design.

40-4415

Structure and specific composition of plant communities in the northern European USSR. (Struktura i vidovoi sostav rastitel'nykh soobshchestv evropelskogo Severa SSSR).

Zaboieva, I.V., ed, Syktyvkar, 1985, 106p., In Russian. For selected papers see 40-4416 through 40-4420. Refs. passim.

Martynenko, V.A., ed, Ryzhova, N.A., ed. Tundra, Mosses, Taiga, Plant ecology, Permafrost depth, Meadow soils, Human factors, Paludification, Ecosystems, Forest soils, Flood plains.

40-4416

Space and time variability of dark conifer forest in southern Timan. (Prostranstvennaia i vremennaia izmenchivost' temnokhoivnykh lesov IUzhnogo Timana).

Nepomilueva, N.I., et al, *Struktura i vidovoi sostav rastitel'nykh soobshchestv evropelskogo Severa SSSR* (Structure and specific composition of plant communities in the northern European USSR) edited by I.V. Zaboieva, V.A. Martynenko and N.A. Ryzhova, Syktyvkar, 1985, p.5-18, In Russian. 7 refs.

Duriagina, D.A. Taiga, Plant ecology, Ecosystems, Cryogenic soils, Forest soils.

40-4417

Structure of bilberry-spruce communities in central taiga. (Sinuzial'naia struktura el'nikov-chernichnikov srednei taigi).

Ryzhova, N.A., *Struktura i vidovoi sostav rastitel'nykh soobshchestv evropelskogo Severa SSSR* (Structure and specific composition of plant communities in the northern European USSR) edited by I.V. Zaboieva, V.A. Martynenko and N.A. Ryzhova, Syktyvkar, 1985, p.19-29, In Russian. 15 refs.

Taiga, Vegetation patterns, Plant ecology, Trees (plants), Mosses, Human factors, Cryogenic soils.

40-4418

Variations in the coenotic role of some meadow plants in flood plains of taiga rivers. (Izmenenie tsenoticheskoi roli nekotorykh vidov lugovykh rastenii v pol'makh taizhnykh rek).

Martynenko, V.A., *Struktura i vidovoi sostav rastitel'nykh soobshchestv evropelskogo Severa SSSR* (Structure and specific composition of plant communities in the northern European USSR) edited by I.V. Zaboieva, V.A. Martynenko and N.A. Ryzhova, Syktyvkar, 1985, p.44-51, In Russian. 11 refs.

Meadow soils, Forest tundra, Cryogenic soils, Taiga, Plant ecology, Forest soils, Flood plains, Ecosystems.

40-4419

Structure of grass stands in seeded tundra meadows. (Struktura travostoiia sciannykh lugov v tundre).

Kotelina, N.S., *Struktura i vidovoi sostav rastitel'nykh soobshchestv evropelskogo Severa SSSR* (Structure and specific composition of plant communities in the northern European USSR) edited by I.V. Zaboieva, V.A. Martynenko and N.A. Ryzhova, Syktyvkar, 1985, p.52-60, In Russian. 8 refs.

Tundra, Grasses, Meadow soils, Swamps, Permafrost depth.

40-4420

Bryophyta of water bodies and swamps of central Timan. (Mokhoobraznye vodoemov i bolot Srednego Timana).

Zheleznova, G.V., *Struktura i vidovoi sostav rastitel'nykh soobshchestv evropelskogo Severa SSSR* (Structure and specific composition of plant communities in the northern European USSR) edited by I.V. Zaboieva, V.A. Martynenko and N.A. Ryzhova, Syktyvkar, 1985, p.94-101, In Russian. 12 refs.

Taiga, Paludification, Mosses, Plant ecology, Ecosystems.

40-4421

Glacial type of sediment and rock origin. (Ledovyi tip sedimentov i litogeneza).

Lavrushin, I.U.A., et al, Moscow, Nauka, 1986, 156p., In Russian with English table of contents enclosed. Refs. p.149-155.

Geptner, A.R., Golubev, I.U.K. Lithology, Glacial deposits, Moraines, Sedimentation, Diagenesis, Hydrothermal processes, Subglacial observations.

40-4422

Vegetational cover of highlands. (Rastitel'nyi pokrov vysokogorij).

Kamelin, R.V., ed, Leningrad, Nauka, 1986, 254p., In Russian. For selected papers see 40-4423 through 40-4432. Refs. passim.

Plant ecology, Alpine landscapes, Ecosystems, Vegetation patterns, Biomass, Grasses, Mosses, Lichens, Deserts, Topographic effects, Alpine tundra, Forest tundra.

40-4423

Lichens in high-mountain valley of the Arpa River (Central Tien Shan). (Lishchii i vysokogorij doliny r. Arpy (Tsentral'nyi T'ian'-Shan').

Bredkina, L.I., *Rastitel'nyi pokrov vysokogorij* (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.15-20, In Russian. 3 refs.

Vegetation patterns, Lichens, Plant ecology, Alpine landscapes, Ecosystems.

40-4424

Altitude distribution of flora in the Magadan area with maritime and continental climates (the Kolyma Range). [Osobennosti vysochnogo raspredeleniya flory v ralonakh s primorskim i kontinental'nym klimatom Magadanskoi oblasti (Kolymaskii Khrebet)], Kuvaev, V.B., Rastitel'nyi pokrov vysokogor' (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.61-65, In Russian. 9 refs. Deserts, Alpine tundra, Vegetation patterns, Permafrost distribution, Plant ecology, Alpine landscapes, Ecosystems.

40-4425

High mountain flora of the Baykal area of Siberia. [O vysokogornoi flore Baikalskoi Sibiri], Malyshev, L.I., Rastitel'nyi pokrov vysokogor' (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.66-71, In Russian. 8 refs. Plants (botany), Plant ecology, Cryogenic soils, Alpine landscapes, Polar regions.

40-4426

Floristic composition of mosses in Pamir-Alai. [Floristicheskiy sostav mkhov Pamiro-Alaiya], Mametkulov, U.K., Rastitel'nyi pokrov vysokogor' (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.72-76, In Russian. 7 refs. Mosses, Vegetation patterns, Plant ecology, Alpine landscapes, Ecosystems.

40-4427

Dryad flora in Tuva tundras. [Flora diadovykh tundr Tuvy], Khanminchun, V.M., Rastitel'nyi pokrov vysokogor' (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.80-85, In Russian. 15 refs. Vegetation patterns, Plant ecology, Ecosystems, Alpine tundra.

40-4428

High mountain vegetation in the south coastal area of the Sea of Okhotsk. [Vysokogornaya rastitel'nost' iuzhnogo poberezh'ia Okhotskogo moria], Vasil'ev, N.G., et al., Rastitel'nyi pokrov vysokogor' (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.101-105, In Russian. 10 refs. Chumin, V.T. Shores, Alpine tundra, Plants (botany), Plant ecology, Ecosystems, Arctic Ocean.

40-4429

Reserves of the over- and underground phytomass of cryophilic meadows of Polar Ural Mountains. [O zapasakh nadzemnoi i podzemnoi fitomassy knofil'nykh lugov Poliarnogo Urala], Igoshcheva, N.I., Rastitel'nyi pokrov vysokogor' (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.113-117, In Russian. 10 refs. Mountain soils, Vegetation patterns, Meadows, Grasses, Plant ecology, Ecosystems, Plant physiology, Roots, Biomass.

40-4430

Basic characteristics of high altitude vegetation in the People's Republic of Mongolia. [Osnovnye cherty vysokogornoi rastitel'nosti Mongol'skoi Narodnoi Respubliki], Karamysheva, Z.V., Rastitel'nyi pokrov vysokogor' (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.121-127, In Russian. 23 refs. Deserts, Plant ecology, Alpine tundra, Vegetation patterns, Ecosystems, Alpine landscapes, Topographic effects.

40-4431

"Tundra steppes" in southern Central Siberia. [O "tundrostepiakh" na iuge Srednei Sibiri], Krasnoborov, I.M., Rastitel'nyi pokrov vysokogor' (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.131-136, In Russian. 16 refs. Cryogenic soils, Plant ecology, Ecosystems, Tundra, Steppes.

40-4432

High-mountain vegetation in the Tyalsko-Konzhakovo-Serebrianskiy mountains and its preservation. [Vysokogornaya rastitel'nost' Tyalsko-Konzhakovo-Serebrianskogo massiva i problemy ee okhrany], Famelis, T.V., et al., Rastitel'nyi pokrov vysokogor' (Vegetational cover of highlands) edited by R.V. Kamelin, Leningrad, Nauka, 1986, p.160-167, In Russian. 10 refs. Nikonova, N.N., Sharafutdinov, M.I. Mosses, Deserts, Environmental protection, Lichens, Alpine tundra, Biomass, Forest tundra, Alpine landscapes, Vegetation patterns, Topographic effects.

40-4433

What should be called glaciofluvium. [Chego nazvat' glaciofluvium?], Lundqvist, J., *Striae*, 1985, Vol.22, Glaciofluvium. Edited by L.-K. Königsson, p.5-8, 9 refs. Mudflows, Glacial deposits, Sediments, Moraines, Glacier melting.

40-4434

Observations on melting of stagnant ice and some related phenomena. [Nabliudeniya za taniem stagniruyushchego leda i nekotorykh svyazannykh s nim yavleniy], Marcussen, I., *Striae*, 1985, Vol.22, Glaciofluvium. Edited by L.-K. Königsson, p.17-20, 6 refs. Ice melting, Ground ice, Sediments, Meltwater, Glacial deposits, Mudflows, Landscapes, Paleoclimatology.

40-4435

On the subglacial sedimentation of hummocky moraines and eskers in northern Finland. [O podglazial'noy sedimentatsii kumulyatsionnykh i eskerskikh obrazovaniy v severnoy Finlyandii], Sutinen, R., *Striae*, 1985, Vol.22, Glaciofluvium. Edited by L.-K. Königsson, p.21-25, 16 refs. Sedimentation, Moraines, Glacial deposits, Geomorphology, Subglacial observations, Hummocks, Glacier flow, Radar echoes, Finland.

40-4436

Bridge foundations in permafrost. [Fondamenty mostov v mrazotverdom grunte], Baldassari, D., *Alaska. Dept. of Transportation and Public Facilities. Research notes*, Apr. 1986, 5(10), 2p. Permafrost physics, Foundations, Bridges, Soil strength, Soil temperature, Settlement (structural), Ground thawing, Pile structures, Soil mechanics, Rheology.

40-4437

Sand stabilization for roads and airfields. [Stabilizatsiya peska na dorogakh i aerodromakh], Esch, D.C., *Alaska. Dept. of Transportation and Public Facilities. Research notes*, July 1986, 6(1), 2p. Soil stabilization, Sands, Roads, Aircraft landing areas, Soil cement, Bitumens, Gravel, Design, Runways, United States—Alaska.

40-4438

Better roads. Special report: winter maintenance. [Dobrye dorogi. Special report: zimnyaya podderzhka], Better roads, June 1986, 56(6), p.21-51. Winter maintenance, Road maintenance, Snow removal, Ice removal, Storage, Salting, Corrosion, Equipment, Protection.

40-4439

Virginia installs Scan Ice Detector. [Virginia ustanyavlivaet skaniruyushchiy detektor leda], Cosby, D.R., *Better roads*, June 1986, 56(6), p.60-61. Ice detection, Road icing, Bridges, Computer applications.

40-4440

Tampere 86: The AIPCR Congress on winter trafficability—a world-wide review. [Tampere 86: Dal Congresso AIPCR sulla viabilità invernale, il punto sulla situazione mondiale], Bilotta, A., *Neve international*, 1986, 28(1), p.22-26, In Italian with French, German and English summaries. Winter maintenance, Snow removal, Equipment, Road maintenance, Meetings.

40-4441

Winter trafficability in member countries of the A.I.P.C.R. [La viabilità invernale nei paesi membri dell'A.I.P.C.R.], De Lannoy, H., *Neve international*, 1986, 28(1), p.27-33, In Italian with French, German and English summaries. Road maintenance, Winter maintenance, Snow removal, Equipment, Tests, Meetings, International cooperation.

40-4442

Winter maintenance and traffic safety in mountain country. [Manutenzione invernale e sicurezza della circolazione nei paesi di montagna], Suter, K., *Neve international*, 1986, 28(1), p.34-36, In Italian with French, German and English summaries. Winter maintenance, Snow accumulation, Mountains, Safety, Accidents, Countermeasures, Trafficability.

40-4443

Snow and ice prevention in the United States. [Prevenzione da neve e ghiaccio negli Stati Uniti], Minsk, L.D., *Neve international*, 1986, 28(1), p.37-42, In Italian with French, German and English summaries. Snow removal, Ice removal, Ice control, Road maintenance, Winter maintenance, Countermeasures, Snow accumulation, Chemical ice prevention, United States.

40-4444

Analysis of snowfalls of particular intensity and length. [Un'analisi delle nevicate di massima intensità e durata], Abbruzzese, F., *Neve international*, 1986, 28(1), p.43-48, In Italian with French, German and English summaries. Snowfall, Snow cover distribution, Mountains, Computer applications, Temperature effects.

40-4445

Predicting avalanche risks in France. Present state and prospects. [Previsione dei rischi di valanghe in Francia. Bilancio e prospettive], Pahaut, E., *Neve international*, 1986, 28(1), p.53-59, In Italian with French, German and English summaries. Avalanches forecasting, Weather forecasting, Temperature variations, Equipment, Weather stations.

40-4446

Ice management manual. Ontario, Canada, Ministry of Natural Resources, 1984, 23p., 22 refs. Ice jams, Ice control, Manneds, Flooding, Countermeasures, Ice breakup, Freezing, Water level.

40-4447

Introduction to heat tracing. [Introduzione al tracciamento del calore], Henry, K., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1986, TD 86-01, 20p., Refs. p.18-20. Heating, Heat transfer, Pipeline freezing, Ship icing, Freezing, Countermeasures, Protection.

40-4448

Erosion of northern reservoir shores. An analysis and application of pertinent literature. [Erosione delle rive dei bacini idrici settentrionali. Un'analisi e un'applicazione della letteratura pertinente], Lawson, D.E., *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1985, M 85-01, 130p., ADA-157 811, Refs. p.137-191. Shore erosion, Ice cover effect, Reservoirs, Slope processes, Permafrost, Shoreline modification, Ground water, Water level, Models, Water waves, Forecasting, Temperature effects.

This monograph describes the current state of knowledge of northern reservoir shore erosion, primarily by examining the results of erosional studies on lakes, coasts and rivers. The major erosional processes of reservoir beaches and bluffs and their mechanics are discussed in detail. Thermal and physical parameters affecting the erodibility of shores, the environmental impacts of erosion, and the basic characteristics of the unique reservoir environment are reviewed. Current models of shore zone development are also presented. This literature analysis revealed that knowledge of erosion and recession in northern impoundments is severely limited. Quantitative analyses of the processes of erosion and their relative importance, parameters determining the nature, rate and timing of erosion, and models to predict the erodibility of a shore for use in minimizing shoreline recession remain in need of basic field research.

40-4449

Excitation of the Earth's rotational axis by recent glacial discharges. [Excitazione dell'asse di rotazione terrestre da recenti scariche glaciali], Gasperini, P., et al., *Geophysical research letters*, June 1986, 13(6), p.533-536, 16 refs. Sabadini, R., Yuen, D.A. Rheology, Sea level, Ice models, Glacier melting.

A study is reported on the effects of present-day glacial discharges, and the growth of the antarctic ice sheet, on exciting the Earth's rotational axis. Glacial forcing could cause a maximum change in the gravitational coefficient of about one-third of the observed amount, for the Maxwell rheology and for Burgers' body models with a long-term, lower-mantle viscosity greater than about  $10 \times 10^{23}$  P. For transient rheologies the amount of excitation due to glacial melting decreases. Polar wander is not much excited by recent glacial melting for the various types of rheologies examined. (Auth.)

40-4450

Growing focus on Antarctica. [Crescente interesse per l'Antartide], Sharma, R.C., ed, Delhi, Rajesh Publications, 1986, 286p. + 18 plates, Refs. passim. For individual papers see 40-4451 through 40-4455 or A-34142, 34152, B-34147-50, 34156, E-34133-5, 34138-9, F-34136-7, G-34144, 34151, I-34140, 34143, 34145-6, K-34141, M-34153-55, and M-34157-61. Snow, Ice. Cold weather construction, Antarctica.

This volume, based on papers submitted to the First National Symposium "Growing focus on Antarctica", held in Delhi, India, Oct. 17-18, 1984, is intended to generate awareness of the prospects in Antarctica and surrounding oceans and their relevance to India's national interests. Twenty-nine papers are included, covering studies pertaining to geology, geophysics,

glaciology, meteorology and biology; resources, technology, infrastructural development and human adaptation; the Antarctic Treaty, the changing laws of the sea, and international politics

40-4451

**Snow and ice studies at and around Dakshin Gangotri, Antarctica.**

Raina, V.K., et al, Growing focus on Antarctica. Edited by R.C. Sharma, Delhi, Rajesh Publications, 1986, p.21-26.

Kaul, M.K., Singh, R.K., Chakraborty, S.K. **Icebergs, Glaciers, Ice structure, Snow accumulation, Ice shelves, Ice physics, Ablation.**

A summary of glaciological investigations carried out over a distance of 160 km, from the sea coast to the land mass of Dakshin Gangotri and beyond, by the Second Indian Expedition to Antarctica, is presented. Included are: the physical features of the ice shelf; its ablation rates, showing an average of 14.25 cm recorded over 45 days; 1.8 cm of snow accumulation, over the same period of time; study of an iceberg 80 m above sea level and a surface of 4 x 3 km; study of a glacier, describing its front, meltwater channels, crevasses, a proglacial lake, moraines and a cryoconite hole. Experiments on artificial augmentation of ablation are discussed. Ice stratigraphy was studied in core samples drilled to a depth of 7 m. Stratigraphy and density profiles of shelf ice, as well as inland ice, are presented

40-4452

**Problems of snow and ice in Antarctica: a glaciologist's point of view.**

Mohan Rao, N., Growing focus on Antarctica. Edited by R.C. Sharma, Delhi, Rajesh Publications, 1986, p.27-31.

**Blowing snow, Icebergs, Ice cover strength.**

The paper covers problems such as the mechanical and thermal instability of ice caps, ice sheets and snow fields used as foundation for structures and air strips in Antarctica; the load bearing capacity of ice shelves, drifting icebergs, and drifting snow. Some methods used in glaciological studies are reviewed.

40-4453

**Construction of the Indian Research Station in Antarctica.**

Nair, P.K., et al, Growing focus on Antarctica. Edited by R.C. Sharma, Delhi, Rajesh Publications, 1986, p.87-95.

Lohumi, H. **Cold weather construction, Antarctica—Dakshin Gangotri Station.**

The planning, building, and equipping of Indian Dakshin Gangotri Station is described in detail. The station was inaugurated on Feb. 24, 1984. The layout of the station is illustrated, showing arrangement of living and laboratory facilities. The source of energy at the station is electrical power generated by three 62.5 KVA, 3-phase generators

40-4454

**Synoptic study of blizzards during Third Antarctic Expedition.**

Trivedi, K.L., Growing focus on Antarctica. Edited by R.C. Sharma, Delhi, Rajesh Publications, 1986, p.97-107.

**Snowstorms, Antarctica—Dakshin Gangotri Station.** The weather around the Dakshin Gangotri was affected by low pressure centres (LPCs), moving from West-East with the frequency of 8/10 during Jan.-Feb., 1984, separated by the longitudinal distance of roughly 60 deg. The intensity of weather was related to the intensity of the system as well as its location. Intense LPCs moving in latitudinal belt south of 65S gave rise to blizzards accompanied by heavy drifting snow. Weak LPCs moving north of 60S gave short spells of gusty surface winds and drifting low clouds. The passage of this system is studied with the help of weather analysis at Molodetznyaya Station, and the local parameters surface wind, pressure and cloudiness

40-4455

**Options for habitat in Antarctica.**

Kadambi, R.V.N., Growing focus on Antarctica. Edited by R.C. Sharma, Delhi, Rajesh Publications, 1986, p.169-178, 6 refs.

**Snowdrifts, Cold weather construction.**

The types of structures built in Antarctica, broadly classified as surface structures, elevated structures, load resistant shells and sub-surface structures, are described. A table giving a qualitative comparison between the different types is presented, rating cost, logistics, construction effort, life, relocation capability, and psychological acceptability for living. Conceptual sketches are presented

40-4456

**Sample digestion and drying techniques for optimal recovery of mercury from soils and sediments.**

Cragin, J.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1985, SR 85-16, 16p., ADA-161 948, 9 refs.

Foley, B.T. **Soil chemistry, Sediments, Metals, Detection, Chemical analysis, Drying.**

Mercury in soils and sediments can be accurately determined over the concentration range of 0.04 to 2 microgram Hg/g using amalgamation on thin gold films. Relative standard deviation of analysis is about 10%. A mild sample dissolution technique, involving HNO<sub>3</sub> at 75C, produced quantitative Hg recoveries for certified sediment samples and recoveries equivalent to those of rigorous Parr-bomb digestions for other soil and sediment samples. Oven drying of samples at 150C resulted in significant losses of Hg from both soil and sediment samples. Air drying, oven drying at 60C or freeze drying resulted in Hg recoveries that agreed with 100% of those for undried samples. Thus, any one of these three comparable methods is recommended for Hg determinations in soils and sediments.

40-4457

**Cold facts of ice jams: case studies of mitigation methods.**

Calkins, D.J., MP 1793, Natural Hazards Research and Applications Information Center special publication, No.11, Association of State Floodplain Managers Conference, 8th, Portland, ME, June 11-14, 1984. Proceedings. Managing high risk flood areas, 1985 and beyond, [1984], p.39-47, 10 refs.

**Ice jams, Floods, Ice control, Ice breakup, Ice booms, Impact strength, Water level, Ice conditions.**

40-4458

**Proceedings, Vol.3.**

International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1065-1474, For Vols.1 and 2 see 40-265 through 40-344. Refs. passim. For selected papers see 40-4459 through 40-4471.

**Ice navigation, Offshore structures, Ports, Ice conditions, Permafrost, Ice physics, Engineering, Meetings, Ice loads.**

40-4459

**Physical modelling techniques for offshore structures in ice.**

Schwarz, J., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1113-1131, 7 refs.

**Ice models, Ice loads, Offshore structures, Ice solid interface, Ice pressure, Ice conditions, Icebergs, Ice floes, Ice physics, Tests.**

40-4460

**Northern sea route: its past, present and future.**

Arikainen, A., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1133-1148.

**Ice navigation, Route surveys, Arctic Ocean.**

40-4461

**Polar lows—a threat to offshore operations in northern waters.**

Carstens, T., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1149-1169, 9 refs.

**Meteorological data, Snowfall, Hail, Sea spray, Ocean waves, Wind velocity, Climatic factors.**

40-4462

**Some mechanisms of localized fracture of ice cover under the action of compression.**

Goldstein, R.V., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1170-1188, 9 refs.

**Osipenko, N.M.**

**Ice cracks, Compressive properties, Fracturing, Brittleness, Ice cover strength, Analysis (mathematics).**

40-4463

**Impact forces and friction coefficient on the forebody of the German polar research vessel *Polarstern*.**

Hoffmann, L., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1189-1202, 2 refs.

**Icebreakers, Ice breaking, Ice friction, Ice solid interface, Impact strength, Ice cover strength, Ice loads, Ice pressure.**

40-4464

**Measurements and analysis of ice force against a conical offshore structure.**

Hoikkanen, J., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1203-1220, 3 refs.

**Ice loads, Offshore structures, Ice mechanics, Tests, Ice pressure, Velocity, Models.**

40-4465

**Brief presentation on port and coastal structures in ice—some American and Canadian experiences.**

Bruun, P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1223-1240, 8 refs.

**Sackinger, W.M.**

**Offshore structures, Ice loads, Ships, Ports, Ice conditions, Ocean waves, Ice solid interface, Design criteria, Protection, Safety.**

40-4466

**12 years programme for baseline studies in Jameson Land, East Greenland.**

Buch, D., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1241-1242.

**Active layer, Snow surveys, Soil strength, Research projects, Trafficability, Oil spills, Climatic factors, Marine transportation, Drilling.**

40-4467

**Normal and extreme ice and navigation conditions in Davis Strait and Disko Bay.**

Fabricius, J., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1254-1260, 4 refs.

**Ice navigation, Ice conditions, Sea ice distribution, Drift, Fast ice, Temperature distribution, Charts, Davis Strait, Greenland—Disko Bay.**

40-4468

**Proposed hydro power scheme at Ilulissat, Greenland.**

Langager, H.C., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1288-1309.

**Permafrost hydrology, Electric power, Meltwater, Climatic factors, Design, Mountains, Models, Greenland—Ilulissat.**

40-4469

**Long calving waves.**

Reeh, N., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1310-1327, 13 refs.

**Calving, Icebergs, Ocean waves, Glacier ice, Wave propagation, Analysis (mathematics).**

40-4470

**Berth for 30,000 T tanker—Nuuk (Godthåb), Greenland.**

Hulgaard, E., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1359-1375.

**Ports, Ice conditions, Tanker ships, Structures, Design, Ice loads, Seasonal variations, Greenland—Nuuk.**

40-4471

**Examples of harbours and harbour constructions in the Greenland towns and settlements.**

Olsen, C.P., International Conference on Port and Ocean Engineering under Arctic Conditions, 8th, Narssarsuaq, Greenland, Sep. 7-14, 1985. Proceedings, Vol.3, Hörsholm, Denmark, Danish Hydraulic Institute, 1985, p.1377-1420.

**Ports, Ice conditions, Hydrography, Cold weather construction, Seasonal variations, Greenland.**

40-4472

**Radio echo sounding in the Shirase Glacier drainage basin.**

Mac, S., *Antarctic record*, Mar. 1986, 30(1), p.11-18, With Japanese summary. 8 refs.

**Glacier ice, Ice sheets, Ice cover thickness, Radio echo soundings, Glacier flow, Antarctica—Shirase Glacier.**

Airborne radio echo sounding was carried out in order to measure the thickness of the ice sheet in the Shirase Glacier drainage basin. From the analysis of the result obtained, the bedrock topography was estimated and it was determined that the elevation of the bedrock in the upstream area of the basin was about 500-1000 m higher than sea level, as predicted in preliminary works. The investigation of the echo strength reflected from the bedrock indicates that the echo in the main part of the ice flow in the basin is stronger than in the edge part. Since the strengthening of echo intensity is caused by the existence of

water, the strong echo observed in the main part supports an assumption, proposed from the thinning of the ice sheet, that the main part of the base of the basin is wet and the ice sheet is sliding on the bedrock. (Auth.)

## 40-4473

Seasonal changes of chlorophyll *a* standing stocks and oceanographic conditions under fast ice near Syowa Station, Antarctica, in 1983/84.

Sato, H., et al, *Antarctic record*, Mar. 1986, 30(1), p.19-32, With Japanese summary. 23 refs.

Watanabe, K., Kanda, H., Takahashi, E.

Fast ice, Ice edge, Plankton, Biomass.

Phytoplankton pigments and oceanographic parameters were measured in water column under the fast ice near Syowa Station from February 1983 to January 1984. Water temperature and practical salinity ranged from -0.94 to -2.11°C and from 32.42 to 34.70, respectively. After the flowout of sea ice in May 1983, the water column was mixed vertically in June, and then supercooled surface water beneath the newly formed ice appeared in late July, which differed remarkably from the phenomena in the preceding year. In this study, maximum chlorophyll *a* concentration of 4.99 mg/cu m was recorded in middle February 1983, and it decreased in middle March. The winter minimum less than 0.1 mg chlorophyll *a*/cu m was observed from June to October, and the concentration increased again after early December. The standing stocks of chlorophyll *a* in mid-January of 1984 were less than half of those in 1983. This could be explained by smaller light penetration into the underlying water between spring and summer of 1983/84 probably due to thicker snow cover on the sea ice compared to that in 1982/83. (Auth.)

## 40-4474

Ice-cold on Niagara.

Churchill, B., *Geographical magazine*, Apr. 1986, 58(4), p.162-164.

Lake ice, Ice booms, Niagara River.

## 40-4475

General circulation model CO<sub>2</sub> sensitivity experiments: snow-sea ice albedo parameterizations and globally averaged surface air temperature.

Washington, W.M., et al, *Climatic change*, June 1986, 8(3), p.231-241, 14 refs.

Meehl, G.A.

Sea ice, Snow cover, Albedo, Solar radiation, Air temperature, Carbon dioxide, Models.

## 40-4476

Glacier drainage and Sandur formation at Kötuljökull, South Iceland.

Heim, D., *Polar geography and geology*, Apr.-June 1985, 9(2), p.91-107, Refs. p.105-107. For German original see 38-1519.

Subglacial caves, Glacial hydrology, Meltwater, Glacier ice, Subglacial drainage, Glacial deposits, Moraines, Structure.

## 40-4477

Ice wharves in the Antarctic.

Dubrov, L.I., et al, *Polar geography and geology*, Apr.-June 1985, 9(2), p.108-115, For Russian original see 14F-30867. 11 refs.

Preobrazhenskaya, M.A.

Moorings, Ice navigation, Glacier ablation, Wharves, Antarctica—Mirny Station, Antarctica—Molodetzhnaya Station.

Natural ice wharves are used on a regular basis for unloading ships at Molodetzhnaya and Novolazarevskaya stations, and less frequently at Mirny. Recession of the ice fronts due to thermal abrasion is posing problems at both locations, due to resultant shallowing of water depths alongside. The feasibility is discussed of stabilizing the retreating ice fronts by means of cooling the ice through the use of heat exchangers, or of creating artificial ice wharves by building up a massive ice body through repeatedly flooding the surface of the fast ice, as has been successfully achieved by the Americans at McMurdo Sound. (Auth.)

## 40-4478

Pingos and palsas: a review of the present state of knowledge.

Pissart, A., *Polar geography and geology*, July-Sep. 1985, 9(3), p.171-195, Refs. p.190-195. Translated from *Inter-Nord*, 1985, No 17, p.21-32.

Peat, Frost mounds, Permafrost hydrology, Organic soils, Swamps, Ground ice, Ice formation, Subpermafrost ground water.

## 40-4479

Development of iceberg research and potential applications.

Schwerdtfeger, P., *Polar geography and geology*, July-Sep. 1985, 9(3), p.202-209, For German original see F-32451. 35 refs.

Icebergs, Low temperature research, Research projects.

For a long time antarctic icebergs were carefully avoided and they were rarely examined scientifically. With the recognition of their potential as valuable sources of fresh water and energy, particularly for the arid zones, a dramatic surge of interest has been manifested by researchers representing a multiplicity of disciplines. Practical utilization of this natural resource now

depends only on politically and economically based decisions. (Auth.)

## 40-4480

Sea ice and icebergs in the southern ocean.

Romanov, A.A., *Polar geography and geology*, July-Sep. 1985, 9(3), p.210-218, For Russian original see F-32710. 15 refs.

Sea ice distribution, Pack ice, Icebergs, Ice edge.

Sea ice observations in the southern ocean for the period 1956-1982 are interpreted and summarized and the general trends in sea ice occurrence, development and decay are described. Interannual variations with special emphasis on seasonal and year-to-year changes in the main elements of the sea ice regime are discussed: these include such elements as the extent of pack ice and the distribution of fast ice. Polynyas and ice massifs are also discussed. Volumes of both sea ice and icebergs at both their maximum and minimum extent, together with seasonal and spatial variations are discussed. The results obtained in terms of sea ice and icebergs differ considerably from previous estimates. (Auth.)

## 40-4481

Thickness, subglacial relief and volume of Svalbard glaciers based on radio-sounding data.

Macheret, I.U.I.A., et al, *Polar geography and geology*, July-Sep. 1985, 9(3), p.224-243, For Russian original see 40-852. 36 refs.

Zhuraviev, A.B., Bobrova, L.I.

Glacier ice, Subglacial observations, Glacier beds, Radio echo soundings, Topographic features.

## 40-4482

Alignment of ice crystals due to transient electric fields.

Burrows, D.A., et al, *Journal of atmospheric and oceanic technology*, June 1986, 3(2), p.265-272, 8 refs.

Stith, J.L.

Ice crystals, Electric fields.

## 40-4483

Simulated atmospheric rime icing of some wind speed sensors.

Gates, E.M., et al, *Journal of atmospheric and oceanic technology*, June 1986, 3(2), p.273-282, 18 refs.

Thompson, W.C.

Icing, Meteorological instruments, Anemometers.

## 40-4484

Calibrating cylindrical hot-film anemometer sensors.

Andreas, E.L., et al, *Journal of atmospheric and oceanic technology*, June 1986, 3(2), p.283-298, Refs. p.298.

Murphy, B.

Anemometers.

We report the results of 82 separate calibrations of cylindrical, platinum hot-film anemometer sensors in air. The calibrations for each sensor involved a determination of its temperature-resistance characteristics, a study of its heat transfer in forced convection, and an investigation of its yaw response. The convective heat transfer relation that we derive predicts the Nusselt number of the sensor as a linear function of  $Re \cdot Pr^{0.40}$ , where  $Re$  is the Reynolds number based on sensor diameter ( $1 < Re < 43$ ). For the 53 micrometer diameter sensors that we used, this heat transfer relation applies to wind speeds typical of the atmospheric surface layer, 1 to 20 m/s. From the heat transfer relation we also devise a method for determining hot-film operating characteristics at temperatures other than the calibration temperature. Hinze's relation is the best model for the yaw response of these sensors, being valid over virtually the entire range of yaw angles, 0 to 90 deg. Although the yaw parameter  $k$  does depend on the flow velocity, that dependence is so weak in the atmospheric surface layer that  $k$  can be assumed constant at 0.3.

## 40-4485

Stochastic modelling and stabilization of galloping transmission lines.

Riaz, H., et al, *Electric power systems research*, Mar. 1986, 10(2), p.137-143, Refs. p.143.

Biswas, S.K., Ahmed, N.U.

Power line icing, Wind factors.

## 40-4486

Study on superglacial cumulative strain on No.1 glacier at the head of Wulumuqi (Urumqi) river, Tianshan.

Jiankang, H., *Kexue tongbao (Scientia)*, Apr. 1986, 31(8), p.548-552, 2 refs.

Glacier flow, Glacier mass balance, Ice deformation, Strains, China—Tian Shan.

## 40-4487

Machine classification of freshwater ice types from Landsat-1 digital data using ice albedos as training sets.

Leshkevich, G.A., *Remote sensing of environment*, June 1985, 17(3), p.251-263, Refs. p.261-263.

Albedo, Ice optics, Remote sensing, Classifications.

## 40-4488

Glacial geology and glaciology of the last mid-latitude ice sheets.

Boulton, G.S., et al, *Geological Society of London. Journal*, May 1985, 142(3), p.447-474, Refs. p.473-474.

Smith, G.D., Jones, A.S., Newsome, J.

Glacial geology, Ice sheets.

## 40-4489

Icing on overhead lines: some results of research.

Flocchini, G., et al, *L'energia elettrica*, Nov. 1985, 62(11), p.493-500, 16 refs.

Palau, C., Nicolini, P., Tavano, F.

Power line icing, Italy—Cappellino Mountain.

## 40-4490

Design practice and snow loading—lessons from a roof collapse.

Pidgeon, N.F., et al, *Structural engineer*, Mar. 1986, 64A(3), p.67-71, 7 refs.

Blockley, D.L., Turner, B.A.

Roofs, Snow loads, Design criteria.

## 40-4491

Influence of hydroxyethyl starch on ice formation in aqueous solutions.

Körber, C., et al, *Cryobiology*, Oct. 1982, 19(5), p.478-492, Refs. p.491-492.

Scheiwe, M.W., Boutron, P., Rau, G.

Cryobiology, Ice formation, X ray diffraction.

## 40-4492

Oil spill related research in the public domain at the Arctic Institute of North America—citations and abstracts.

Arctic Institute of North America, Consolidex Mag-north Oakwood Joint Venture, Calgary, Alberta, Resource Management Plan support document No.13, Jan. 1983, 115p.

Oil spills, Ice conditions, Environmental impact, Bibliographies, Human factors, Sea ice, Crude oil, Models, Arctic Ocean.

## 40-4493

Preliminary study of the occurrence of trace metals in Admiralty Bay.

Wstępne badania nad występowaniem metali śladowych w Zatoce Admiralicji, Brzezińska, A., et al, *Chemia morza*, 1981, 4(34), p.113-126, In Polish with English summary. 9 refs.

Samp, R.

DLC GC113.C47

Ice composition, Pollution, Antarctica—Admiralty Bay, Antarctica—King George Island.

Results of investigations of the occurrence of trace metals Cd, Cu, Hg, Pb, Zn in the surface waters of Admiralty Bay, and the neighbouring icefield on King George I., are presented. The metals were determined separately in sea water free of suspended particles and in suspended particles stopped at membrane filters. The results of the determinations are compared with trace metal concentrations in other parts of the antarctic ocean and in the Baltic. (Auth.)

## 40-4494

Soil development at Kongsfjorden, Spitsbergen.

Mann, D.H., et al, *Polar research*, May 1986, 4(1), p.1-6, 39 refs.

Sletten, R.S., Ugolini, F.C.

Soil formation, Soil chemistry, Norway—Spitsbergen.

## 40-4495

Remote sensing of ice cap outlet glacier fluctuations on Nordaustlandet, Svalbard.

Dowdeswell, J.A., *Polar research*, May 1986, 4(1), p.25-32, 18 refs.

Ice sheets, Glacier oscillation, Remote sensing, Aerial surveys, Norway—Nordaustlandet.

## 40-4496

Foam spora in running waters of southern Greenland.

Engblom, E., et al, *Polar research*, May 1986, 4(1), p.47-51, 23 refs.

Lindell, P.-E., Marvanová, L., Müller-Haeckel, A.

Stream flow, Limnology, Microbiology, Greenland.

## 40-4497

Observations on the vegetation and vascular plants on Hopen.

Skye, E., *Polar research*, May 1986, 4(1), p.69-78, 10 refs.

Plants (botany), Vegetation, Norway—Hopen Island.

## 40-4498

Submarine evidence of glacier surges.

Solheim, A., *Polar research*, May 1986, 4(1), p.91-95, 8 refs.

Glacier surges, Bottom topography, Acoustic measurement, Norway—Nordaustlandet.

## 40-4499

Glaciological investigations in the balance year 1983-84.  
Liestøl, O., *Polar research*, May 1986, 4(1), p.97-101.  
Glacier mass balance, Norway.

## 40-4500

Future of antarctic resources.  
Bonner, W.N., *Geographical journal*, July 1986, 152(2), p.248-255, 6 refs.  
Natural resources, Economic development, Antarctica.

As the human population increases so demands on our planet increase, but at an accelerating rate, since the more sophisticated modern societies place a disproportionate demand on natural resources. Because of this, we are forced to examine what the Earth can offer us; we cannot afford to ignore the resources that are present, though we must consider carefully the economic and other consequences of harvesting a resource. In this paper the resources of the Antarctic are briefly reviewed in terms of what they have contributed in the past, and how in the future they may be expected to contribute to human society. (Auth.)

## 40-4501

Climatology of polar mesospheric clouds.  
Olivero, J.J., et al., *Journal of the atmospheric sciences*, June 15, 1986, 43(12), p.1263-1274, 12 refs.  
Thomas, G.E.

Cloud physics, Solar radiation, Diffusion, Brightness.  
The ultraviolet spectrometer on board the Solar Mesosphere Explorer Satellite has measured solar radiation scattered from a diffuse and patchy layer of material near the summer polar mesopause. This scattering layer is called polar mesospheric clouds (PMC) and a first climatology of this phenomenon is presented covering three years (six summer seasons). How bright are PMC and how frequently do they occur in space and time? Are there year-to-year or hemisphere-to-hemisphere differences in PMC seasons? The brightest PMC are found right where they occur most frequently—above 70-75 deg latitude and in a season of 30 to 80 days duration centered about the peak which occurs about 20 days after the summer solstice. This holds true for both hemispheres. Variability occurs on time scales from 10 to 30 days, to year-to-year; averaging over large time and space scales does, however, reveal a basic underlying symmetry. A major finding is that for the six seasons considered, the Northern Hemisphere clouds are inherently brighter than the Southern Hemisphere ones. (Auth.)

## 40-4502

Land of perpetual winter. (Strana vechnoi zimy).  
Losev, K.S., Leningrad, Gidrometeoizdat, 1986, 112p., In Russian.  
Ice sheets, Rheology, Glacier flow, Mass balance, Ice cover effect, Climate, Sea level, Icebergs, Ice volume.  
The book deals with the antarctic ice cover, describing its proportions, structure, subglacial topography, fresh water content, and the motion of different structures within the ice and on its surface. Questions related to ice-cover research are summarized, including the effect of the antarctic ice sheet on climate and its role in the fluctuations of the world ocean. A few concluding paragraphs refer to the Antarctic Treaty and stress the point that Antarctica does not belong to any country in particular.

## 40-4503

Interactive analysis of satellite ice cover imagery.  
Klepikov, S.A., et al., *Soviet journal of remote sensing*, 1985, 3(6), p.1006-1011, For Russian original see 38-2093, 2 refs.  
Nazirov, M., Nikitin, P.A.  
Sea ice distribution, Spaceborne photography, Photointerpretation, Ice surveys, Ice reporting.

## 40-4504

Glaciology of mountainous regions. (Gliatsiologiya gornyykh oblastey).  
Suslov, V.F., ed., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, 156p., In Russian. For individual papers see 40-4505 through 40-4520. Refs. passim.  
Drozdovskaya, N.F., ed.  
Glacier ice, Glacier flow, Mountain glaciers, Snow cover distribution, Snow accumulation, Avalanche formation, Avalanche engineering, Ice volume, Slope processes, Glacial hydrology.

## 40-4505

Duration of snow cover in Tien Shan. (Prodolzhitel'nost' zalezaniya snezhnogo pokrova na Tian-Shane).  
Getker, M.I., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.3-15, In Russian. 14 refs.  
Snow cover distribution, Snow cover stability, Snow depth, Snow surveys, Route surveys, Aerial surveys, Mapping.

## 40-4506

Analytical calculation of snow accumulation on mountain slopes. (K voprosu analiticheskogo rascheta snegonakopleniya na sklonakh gor).  
Fomin, A.G., et al., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.15-25, In Russian. 5 refs.  
Matvienko, V.S.  
Snowdrifts, Slope processes, Snow accumulation, Wind factors, Computerized simulation, Topographic effects.

## 40-4507

Snow and meteorological indices of basic types of avalanche regimes in the USSR. (Snezhno-meteorologicheskie pokazateli osnovnykh tipov lavinnogo rezhima SSSR).  
Troshkina, E.S., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.25-31.  
Snow accumulation, Snow depth, Snow cover stability, Avalanches, Classifications, Avalanche formation, Avalanche triggering, Meteorological factors.

## 40-4508

Information content of avalanche-formation factors. (K otsenke informativnosti faktorov lavinoobrazovaniya).  
Kanaev, L.A., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.31-49, In Russian. 35 refs.  
Avalanche forecasting, Avalanche formation, Snow depth, Humidity, Avalanche engineering, Heat transfer, Snow cover stability.

## 40-4509

Calculation and possible forecasting of the area of the large snow field in the Chimganka River basin. (Raschet i vozmozhnost' prognoza ploshchadi bol'shogo snezhnika v basseine r. Chimgankay).  
Kharitonov, G.G., et al., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.50-57, In Russian. 10 refs.  
Iazykov, L.E.  
Snow cover distribution, Snow accumulation, River basins, Meteorological factors.

## 40-4510

Peculiarities of the conditions of hoarfrost formation at the snow surface in relation to avalanche formation. (O nekotorykh osobennostiakh usloviy formirovaniya ieni na poverkhnosti snega v svyazi s obrazovaniem laviny).  
Dziuba, V.V., et al., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.58-64, In Russian. 6 refs.  
Polozhentsev, S.R.  
Snow surface, Snow temperature, Snow air interface, Hoarfrost, Avalanche formation, Snow depth, Heat transfer, Mass transfer.

## 40-4511

Climatic conditions of avalanche formation and possibilities of its forecasting from meteorological background at the northern slope of Zailiyskiy Alatau. (Klimaticheskie usloviya lavinoobrazovaniya i vozmozhnosti fonovogo prognozirovaniya lavinnol opasnosti na severnom sklone Zailiyskogo Alatau).  
Kondrashov, I.V., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.64-73, In Russian. 12 refs.  
Avalanche formation, Avalanche forecasting, Climatic factors.

## 40-4512

Experience in recognizing snowstorm avalanches in the Nangarzan River basin. (Opyt opoznavaniya lavin metel'nogo snega v basseine r. Nangarzan).  
Dushkin, V.S., et al., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.75-82, In Russian. 14 refs.  
Kanaev, L.A.  
Avalanches, Avalanche formation, Snowstorms, Snow accumulation, Classifications, Computer applications, Statistical analysis, Avalanche forecasting.

## 40-4513

Snow-ice slopes as a special category of avalanche-danger areas. (Snezhno-ledovye sklonyy kak osobaya kategoriya lavinoopasnykh territoriy).  
Uskov, I.U.S., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.82-88, In Russian. 1 refs.  
Spaceborne photography, Alpine glaciation, Slope processes, Avalanche formation, Photointerpretation.

## 40-4514

Friction in the movement of avalanches. (O trении dvizheniya laviny).  
Moskalev, I.U.D., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.83-98, In Russian. 5 refs.  
Avalanche mechanics, Internal friction, Plastics snow friction, Snow elasticity, Slope processes.

## 40-4515

Studying components of the accumulation-ablation index in glaciated regions of Central Asia. (Issledovanie komponentov indeksa balansa akumulatsii i taianiya v glatsial'nykh oblastiakh Srednei Azii).  
Kononov, V.G., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.98-109, In Russian. 9 refs.  
Alpine glaciation, Glacier ablation, Glacier alimentation, Glacier mass balance.

## 40-4516

Water and ice balance of the Abramov glacier basin. (Vodnoledovyi balans basseina lednika Abramova).  
Akbarov, A.A., et al., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.109-115, In Russian. 3 refs.  
Nozdriukhin, V.K., Suslov, V.F.  
Mountain glaciers, Snow accumulation, Meteorological data, Glacier alimentation, Glacier ablation, Mass balance.

## 40-4517

Data on the ice movement velocity and ice thickness of the Abramov glacier. (Rezultaty opredeleniya polia skorosti dvizheniya i dani moshchnosti lednika Abramova).  
Grishin, V.V., et al., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.116-120, In Russian. 5 refs.  
Abul'khanova, A.G.  
Glacier flow, Glacier thickness, Mountain glaciers, Velocity measurement.

## 40-4518

Hydrologic regime of the Akarkhar River. (K voprosu o gidrologicheskom rezhime r. Akarkhar).  
Lesnik, L.N., et al., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.120-129, In Russian. 6 refs.  
Isakhanov, S.A.  
Glacial rivers, Glacial hydrology, Glacier ablation, Moraines, River basins, Runoff.

## 40-4519

Effectiveness of applied scientific research in the study of exogenic processes. (Effektivnost' prikladnykh nauchno-issledovatel'skikh rabot v oblasti izucheniya ekzogennykh protsessov).  
Mukhibov, I.A.U., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.129-135, In Russian. 2 refs.  
Slope processes, Avalanches, Landslides, Mudflows, Solifluction, Research projects.

## 40-4520

Evaluation of winter recreational resources in Central Asian mountains. (K otsenke zimnikh rekreatsionnykh resursov gor Srednei Azii).  
Getker, M.I., et al., *Sredneaziatskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1986, Vol.107, p.135-144, In Russian. 2 refs.  
Orestov, O.I.  
Snow cover distribution, Skis, Sleds, Snow impurities, Soil erosion, Alpine landscapes, Environmental protection.

## 40-4521

Cold weather maintenance of hydraulic drives. (Ob-sluzhivanie gidroprivodov zimoi).  
Kupriyanovich, V., *Vestnik protivovozdushnoi oborony*, Jan. 1986, No.1, p.62-65, In Russian.  
Military equipment, Winter maintenance, Cold weather operation.

## 40-4522

Basic factors in binding dispersed soils with ash-slag cements. (Rol' osnovnykh faktorov v ukreplenii dispersnykh gruntov zoloshlakovymi viazhushchimi).  
Voronkevich, S.D., et al., *Inzhenernaya geologiya*, May-June 1986, No.3, p.43-54, In Russian. 10 refs.  
Evdokimova, L.A., Larionova, N.A., Ogorodnikova, E.N.  
Wastes, Cements, Environmental protection, Soil stabilization, Ash, Pollution.

40-4523

Performance of regenerators under hoarfrost conditions. (Rabota regeneratov v usloviakh ineeobrazovaniya). Karpis, E.E., et al. *Vodosnabzhenie i sanitarnaia tekhnika*, 1986, No.1, p.10-12, In Russian.  
 Poz, M.I.A., Granovskii, V.L.  
 Electric heating, Heat transfer, Equipment, Cold weather operation.

40-4524

Environmental correlates of pack ice noise. Makris, N.C., et al. *Acoustical Society of America. Journal*, May 1986, 79(5), p.1434-1440, Refs. p.1440.  
 Dyer, I.

Pack ice, Noise (sound).

40-4525

Water trough testing pinpoints best snowplow angles. *Better roads*, May 1986, 56(5), p.60-63.  
 Snow removal, Equipment.

40-4526

Overwinter soil moisture changes. Gray, D.M., et al. *American Society of Agricultural Engineers. Transactions*, Mar./Apr. 1985, 28(2), p.442-447, Refs. p.447.  
 Granger, R.J., Dyck, G.E.

Soil water migration, Soil freezing.

40-4527

Measurement of ice growth during simulated and natural icing conditions using ultrasonic pulse-echo techniques.

Hansman, R.J., Jr., et al. *Journal of aircraft*, June 1986, 23(6), p.492-498, 7 refs.

Kirby, M.S.

Ultrasonic tests, Ice accretion, Icing rate.

40-4528

Proceedings, Vols. 1 and 2. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986, 1986, 2 vols., Refs. passim. For individual papers see 40-4529 through 40-4608.

Ice loads, Ice navigation, Offshore structures, Ice mechanics, Ice strength, Engineering, Meetings, Icing, Ice jams, Ice solid interface, Ice physics, Pressure ridges.

40-4529

Laboratory study of flow in an ice-covered sand bed channel. Wuebben, J.L., MP 2123, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.3-14, 11 refs.

Channels (waterways), Ice cover effect, Water flow, Bottom topography, Sands, Flow rate, Bottom ice, Sediment transport, Tests, Analysis (mathematics).

The objective of this study was to examine the effects of adding an ice cover to flow in a movable bed channel. A series of five tests at four water discharges were conducted in a 36-m-long recirculating flume facility that is 1.2 m wide and 0.6 m deep. After uniform, equilibrium conditions were established for a flow of water with a free surface, essentially identical runs were repeated with the addition of smooth and rough ice covers. All tests were run at room temperature, approximately 19°C, with simulated ice covers. The sediment was a uniform, 0.45-mm-diameter quartz sand and bed forms were in the ripple and dune regimes. The major variables examined in this paper include bed form height, wavelength, Manning's roughness and sediment discharge.

40-4530

Dynamic unsteady one-dimensional flow routing in ice-covered rivers.

Reiter, P., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.15-26, 8 refs.

Huokuna, M.

River flow, Ice cover effect, River ice, Flow rate, Ice conditions, Dams, Ice forecasting, Mathematical models, Frazil ice, Thermal effects, Finland.

40-4531

Effects of flow regime on freeze-up processes in small rivers.

Santeford, H.S., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.27-40, 4 refs.

Alger, G.R., Immen-Christensen, M.

River flow, Freezeup, Ice conditions, Ice flows, Flow rate.

40-4532

Estimation of resistance to flow in ice covered channels using binary velocity distributions.

Hendriksen, F., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.41-52, 8 refs.

Davut, K.S.

Channels (waterways), Water flow, Flow rate, Ice cover effect, River flow, Velocity, Friction, Slope orientation, Analysis (mathematics).

40-4533

Multiple roughness ice covered channels. Chee, S.P., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.53-62, 7 refs.

Ray, S.

Stream flow, Ice cover effect, Flow rate, Ice bottom surface, Bottom topography, Surface roughness, Channels (waterways), Slope orientation, Velocity, River flow, Analysis (mathematics).

40-4534

Formation of ice cover on impounding reservoir and its influence on roughness coefficients and flow conditions.

Majewski, W., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.63-74, 5 refs.

Grzes, M.

Ice formation, Reservoirs, River flow, Ice cover effect, River ice, Flow rate, Surface roughness, Ice conditions, Ice jams, Ice bottom surface.

40-4535

Packing in front of a forming river ice cover.

Michel, B., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.75-87, 17 refs.

River ice, Ice formation, Pack ice, Ice cover thickness, Ice dams, Analysis (mathematics), Computer applications.

40-4536

Simple mathematical model of moving sheet ice.

Marcotte, N., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.89-100, 6 refs.

Ice mechanics, Ice sheets, River ice, River flow, Mathematical models, Water temperature, Heat transfer, Ice deformation, Velocity, Flow rate, Computer applications.

40-4537

Interaction of waves with ice floes.

Kobayashi, N., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.101-112, 28 refs.

Frankenstein, S.

Ice floes, Ocean waves, Ice water interface, Ice models, Ice loads, Offshore structures, Exploration, Petroleum industry, Icebergs, Velocity.

40-4538

Nonlinear interactions of waves under a stressed, elastic ice sheet.

Green, T., III, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.113-124, 5 refs.

Ice sheets, Ice elasticity, Water waves, Ice water interface, Tensile properties, Compressive properties, Analysis (mathematics), Wave propagation.

40-4539

Uplifting ice forces on long vertical walls.

Christensen, F.T., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.127-135, 7 refs.

Tryde, P.

Ice loads, Walls, Water level, Ice pressure, Ice cracks, Ice cover strength, Analysis (mathematics), Uplift pressure.

40-4540

Calculation of ice force exerted by a drifting floe on a ridge or other horizontal structures.

Sundt, J., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.137-148, 2 refs.

Ice loads, Bridges, Piers, Ice pressure, Dynamic loads, Drift, Tests, Impact strength, Analysis (mathematics).

40-4541

Ice sheet failure against an inclined wall.

Mänttinen, M., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.149-158, 10 refs.

Ice sheets, Structures, Ice loads, Ice deformation, Ice cover strength, Cracking (fracturing), Shear strength, Dynamic loads, Models.

40-4542

Probabilistic model for multiyear ice ridge loads on conical structures.

Winkler, M.M., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.159-170, 14 refs.

Reece, A.M.

Pressure ridges, Ice loads, Offshore structures, Models, Ice override, Ice floes, Offshore drilling, Design criteria, Ice cover thickness.

40-4543

Ice ridge ride-up forces on conical structures. Winkler, M.M., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.171-183, 7 refs.

Nordgren, R.P.

Pressure ridges, Ice override, Ice loads, Flexural strength, Analysis (mathematics).

40-4544

Experimental studies of ice forces on conical structures.

Kato, K., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.185-196, 3 refs.

Ice loads, Offshore structures, Ice pressure, Ice breaking, Ice override, Experimentation, Analysis (mathematics).

40-4545

Model study of a floating, moored platform in a moving field of mushy ice rubble.

Matsuishi, M., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.197-209, 3 refs.

Ettema, R.

Ice loads, Floating structures, Ice conditions, Doped ice, Impact strength, Tests, Urea, Analysis (mathematics), Platforms.

40-4546

New facility for ice engineering in the Nagasaki experimental tank.

Takekuma, K., et al. IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.211-222, 1 ref.

Kitami, E., Kayo, Y., Fujita, T.

Test chambers, Test equipment, Ice loads, Cold chambers, Laboratories, Design, Engineering, Experimentation, Tanks (containers), Analysis (mathematics), Ice sheets, Refrigeration.

40-4547

Deep setting foundation of anti-ice platform-mud suction-drainage system.

Wang, Q.J., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.223-229, 5 refs.

Ice loads, Offshore structures, Foundations, Ice strength, Pile structures, Design, Mud, Countermeasures, Ice pressure, Platforms.

40-4548

Design value of pressure due to expansion of ice sheet in reservoir.

Xu, B., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.231-238, 2 refs.

Ice pressure, Ice sheets, Reservoirs, Ice growth, Ice cover thickness, Temperature variations, Air temperature, Ice temperature.

40-4549

Comparison of two constitutive theories for compressive deformation of columnar sea ice.

Brown, R.L., et al. MP 2124, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.241-252, 11 refs.

Kuchner-Menge, J.A., Cox, G.F.N.

Ice deformation, Compressive properties, Ice crystal structure, Sea ice, Viscoelastic materials, Models, Stress strain diagrams, Analysis (mathematics).

Two constitutive formulations are used to represent the constitutive behavior of columnar sea ice under variable path compressive loadings. The first is a single integral representation which has been successfully used to model viscoelastic materials. This representation is a convenient form for describing nonlinear rate dependent properties and is mathematically more tractable than multiple integral representations or nonlinear differential relations. The second constitutive formulation is an elastic-viscoplastic relation which defines the instantaneous strain rate in terms of several microdynamical variables (compressive mobile dislocation density, tensile mobile dislocation density, and specific microcrack surface area).

40-4550

Integrated constitutive theory for the mechanical behavior of sea ice: experimental verification.

Sunder, S.S., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, 1986, p.253-264, 11 refs.

Ice mechanics, Ice creep, Ice strength, Sea ice, Strain tests, Ice cracks, Models, Theories, Ice elasticity, Fracturing.

- 40-4551**  
Comparison of small-scale and large-scale sea ice strengths.  
Petrie, D.H., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.265-277, 8 refs.  
Poplin, J.P.  
Ice strength, Sea ice, Compressive properties, Ice conditions, Strain tests, Ice temperature, Ice crystal structure, Tests, Ice salinity, United States—Alaska—Prudhoe Bay.
- 40-4552**  
Field measurements of the shear strength of columnar-grained sea ice.  
Frederking, R., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.279-292, 10 refs.  
Timco, G.W.  
Ice strength, Shear strength, Loads (forces), Sea ice, Tests, Air entrainment, Ice temperature, Ice crystal structure, Porosity.
- 40-4553**  
Full-thickness sea ice strength tests.  
Lee, J., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.293-306, 3 refs.  
Ralston, T.D., Petrie, D.H.  
Ice cover strength, Ice cover thickness, Sea ice, Strain tests, Compressive properties, Tests, Ice temperature, Temperature distribution, Ice crystal structure, Ice salinity.
- 40-4554**  
Secondary creep in confined ice samples.  
Nadreau, J.P., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.307-318, 18 refs.  
Michel, B.  
Ice creep, Loads (forces), Ice strength, Tests, Ice salinity, Compressive properties, Tensile properties, Temperature effects, Stress strain diagrams.
- 40-4555**  
Ball penetration into a floating ice plate.  
Khrapaty, N.G., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.319-327, 5 refs.  
Taktchev, V.A., Gomol'skii, S.G.  
Floating ice, Penetration tests, Ice elasticity, Analysis (mathematics).
- 40-4556**  
Application of fracture mechanics techniques to ice-structure interaction problems.  
Hamza, H., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.329-347, Refs. p.335-342.  
Ice loads, Ice cracks, Offshore structures, Ice solid interface, Fracturing, Engineering, Loads (forces), Design, Stress, Ice floes, Computer applications.
- 40-4557**  
Multiaxial mechanical properties of urea doped ice.  
Hausler, F.U., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.349-363, 22 refs.  
Ice mechanics, Doped ice, Loads (forces), Strains, Ice strength, Urea, Tests, Temperature effects, Anisotropy, Compressive properties.
- 40-4558**  
Fracture toughness of model ice.  
Dempsey, J.P., et al, MP 2125, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.365-376, 28 refs.  
Bentley, D.L., Sodhi, D.S.  
Ice cracks, Fracturing, Ice strength, Tensile properties, Compressive properties, Stresses, Strains.  
A wedge-loaded TDCB (tapered double-cantilever-beam) test specimen was used to measure the fracture toughness of model ice. Crack path stability under tensile cracking conditions was ensured by way of the crack-parallel compressive stress provided by the displacement controlled wedge loading. The TDCB specimen size and ice thickness were such that plane strain fracture toughness values were obtained. The influence of crack tip acuity and loading rate were examined.
- 40-4559**  
Testing methods for adfreeze bond strength between sea ice and various materials.  
Sacki, H., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.377-388, 4 refs.  
Ice adhesion, Ice solid interface, Sea ice, Offshore structures, Concrete structures, Steel structures, Tests.
- 40-4560**  
Laboratory and field studies of ice friction coefficient.  
Tatinclaux, J.C., et al, MP 2126, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.389-400, 5 refs.  
Forland, K.A., Murdey, D.  
Ice friction, Ice crystal structure, Surface roughness, Steel structures, Shear strength, Tests, Air temperature, Plates, Laboratory techniques.  
Results of laboratory and field tests on the dynamic friction factor between ice (freshwater, urea-doped, and granular or columnar sea ice) and bare or Inerta-coated steel plates of various roughness averages are presented. Laboratory tests were made at three air temperatures,  $T = -15, -9, \text{ and } -2^\circ\text{C}$ , with either the ice sample towed over the test plate or a plate sample towed over the ice sheet. All field tests were made at  $T = -2^\circ\text{C}$  to  $0^\circ\text{C}$ . The maximum test velocity was  $30\text{ cm/s}$ , and the normal pressure was of the order of  $10\text{ kPa}$ . From the test results it is concluded that viscous shear in the meltwater layer between ice and test plate may dominate when the test plate is very smooth, as proposed by Oksanen in his analytical model, but when the material roughness increases, mechanical shear of the ice crystals dominates.
- 40-4561**  
Experiments on freeze-bonding between ice blocks in floating ice rubble.  
Schaefer, J.A., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.401-413, 17 refs.  
Ettema, R.  
Floating ice, Ice strength, Ice adhesion, Ice pressure, Shear strength, Ice cover thickness, Cold chambers, Experimentation.
- 40-4562**  
Frazil disk diameters.  
Hanley, T.O., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.417-426, 8 refs.  
Frazil ice, Ice growth, Temperature effects, Cold chambers, Air temperature, Water flow, Grain size.
- 40-4563**  
Frazil ice measurements in CRREL's flume facility.  
Daly, S.F., et al, MP 2127, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.427-438, 9 refs.  
Colbeck, S.C.  
Frazil ice, Particle size distribution, Ice growth, Ice crystals' nuclei, Ice mechanics.  
In a series of recent experiments the dynamic size distribution and concentration of frazil ice crystals were measured in the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) refrigerated flume facility. These data were found using a crystal imaging system developed at CRREL. The imaging system consists of a circular fiber-optic probe light, a microscope, and either a high resolution television camera and monitor or a 35 mm camera. The system can observe crystal sizes ranging from 30 micrometers to several millimeters. This system was attached to a movable carriage mounted on the flume. A series of experiments were performed. In each experiment, the size distribution of the frazil crystals was measured as it developed along the length of the flume. The slope of the flume and the bottom roughness of the flume were varied to provide a range of hydraulic conditions. Supercooling levels of  $0.01^\circ\text{C}$  to  $0.04^\circ\text{C}$  were achieved in the flume and held constant for several hours.
- 40-4564**  
Preliminary study of a structure to form an ice cover on river rapids during winter.  
Perham, R.E., MP 2128, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.439-450, 9 refs.  
Ice growth, Ice cover, Frazil ice, Hydraulic structures, Ice dams, River ice, Countermeasures, Flooding, Tests, Ice booms.  
The concept of using a trash-rack-like fence across a river to form an overflow weir by accumulating frazil ice was studied. The main purpose of the structure is to create an upstream pool on which a smooth ice cover can form. Laboratory tests in a refrigerated flume provided structural stability guidance and some frazil accumulation experience, with the latter being somewhat inconclusive. Field tests were conducted using a 19-m-long by 1.22-m-high fence boom across two approximately 17-m-wide rivers, one in New Hampshire and one in Vermont.
- 40-4565**  
Growth of ice cover in steep and small rivers.  
Hirayama, K., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.451-464, 14 refs.  
Ice growth, River ice, Frazil ice, Fast ice, Ice cover, River flow, Air temperature, Analysis (mathematics).
- 40-4566**  
Sub-ice channels and longitudinal frazil bars, ice-covered Tanana River, Alaska.  
Lawson, D.E., et al, MP 2129, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.465-474, 6 refs.  
Chacho, E.F., Brockett, B.E.  
River flow, Subglacial drainage, Channels (waterways), Frazil ice, River ice, Icebound rivers, Ice bottom surface, Sediment transport, Velocity, United States—Alaska—Tanana River.  
Repetitive surveys and measurements from 1983 through 1986 of the ice-covered Tanana River near Fairbanks, Alaska, have shown that flow occurs in sub-ice channels that are separated by longitudinal bars composed of stratified, partly consolidated frazil ice of varying type and distribution. In contrast to hanging dams, these frazil bars extend up- and downstream parallel to flow as well as from the base of the ice cover to the bed, and act as lateral walls for the sub-ice channels. Individual sub-ice channels may branch and reunite, thus forming a braided pattern beneath the ice cover. Longitudinal frazil bars apparently develop at locations characterized by lower velocities, such as where currents are diverted by irregularities in the bed or in the base of the ice cover.
- 40-4567**  
Frazil ice pebbles: frazil ice aggregates in the Tanana River near Fairbanks, Alaska.  
Chacho, E.F., et al, MP 2130, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.475-483, 4 refs.  
Lawson, D.E., Brockett, B.E.  
Frazil ice, Ice mechanics, Ice growth, Aggregates, Grain size, Abrasion, United States—Alaska—Tanana River.  
A unique form of frazil ice aggregate, the frazil ice pebble, occurs in large quantities in the Tanana River near Fairbanks, Alaska. Frazil pebbles consist of a mixture of individual particles, including other aggregates, which are bound together to form a consolidated, compact mass that is similar in appearance to water-worn stream pebbles. Frazil pebbles have been found incorporated into the ice cover, in transport beneath the ice cover and in frazil deposits. They range in length from less than 5 mm to greater than 150 mm. Internally, grains composing the frazil pebbles do not possess a preferred C-axis orientation, but appear to show an alignment related to grain size and shape.
- 40-4568**  
Ice formation and erosion at river thresholds.  
Dahl, R., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.485-492, 2 refs.  
Ice formation, Ice erosion, River ice, River flow, Seasonal variations, Ice growth, Ice cover.
- 40-4569**  
Elementary mathematical modelling of anchor ice.  
Marcotte, N., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.493-506.  
Robert, S.  
Bottom ice, Ice growth, River ice, Heat transfer, Mathematical models, Water level, Computer applications.
- 40-4570**  
Experiments on naled ice growth.  
Schohl, G.A., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.507-520, 5 refs.  
Ettema, R.  
Naleds, Ice growth, Tests, Analysis (mathematics), Time factor.
- 40-4571**  
Thin ice sheet formation on warm water.  
Hausser, R., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.521-532, 2 refs.  
Drouin, M., Parkinson, F.E.  
Ice formation, Water temperature, Ice sheets, Ice cover thickness, River ice, Ice at balance, Frost.
- 40-4572**  
Ice cover thawing caused by flowing water.  
Matousek, V., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.533-545, 3 refs.  
Ice melting, Water flow, River ice, Ice cover, Water temperature, Velocity, Ice navigation, Analysis (mathematics).
- 40-4573**  
Two-dimensional simulation of ice cover formation in a large river.  
Shen, H.T., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.547-558, 17 refs.  
Ho, C.-F.  
Ice formation, River ice, Mathematical models, Ice cover thickness.

- 40-4574**  
Modelling initial ice formation in rivers and oceans. Omstedt, A., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.559-568, 14 refs.  
Ice formation, River ice, Sea ice, Mathematical models.
- 40-4575**  
On the thermal diffusivity of sea ice. Langleben, M.P., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.569-578, 5 refs.  
Ice temperature, Sea ice, Ice surface, Thermal diffusion, Floating ice, Surface temperature, Time factor.
- 40-4576**  
Thermal and phase stability analysis of constructed ice islands. Hocking, G., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.579-590, 15 refs.  
Worgan, K.  
Ice islands, Thermal regime, Offshore structures, Design, Stability, Temperature control, Mass balance, Analysis (mathematics).
- 40-4577**  
Model tests of the ridge-building process in ice. Timco, G.W., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.591-602, 4 refs.  
Sayed, M.  
Pressure ridges, Ice formation, Ice cover thickness, Ice growth, Models, Experimentation, Flexural strength.
- 40-4578**  
On modelling of ice ridge formation. Sayed, M., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.603-614, 15 refs.  
Frederking, R.  
Pressure ridges, Ice formation, Ice cover thickness, Stresses, Ice models, Analysis (mathematics).
- 40-4579**  
Force transfer and behavior of rubble piles. Williams, J.R., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.1, [1986], p.615-626, 16 refs.  
Mustoe, G.G.W., Worgan, K.  
Pressure ridges, Loads (forces), Offshore structures, Ice formation, Ice loads, Ice cover thickness, Forecasting, Ice solid interface, Ice cracks, Ice mechanics.
- 40-4580**  
Preliminary studies of grounded ice jams. Beltaos, S., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.3-14, 13 refs.  
Wong, J.  
Ice jams, Grounded ice, Flooding, Stability, Slope orientation, Tests.
- 40-4581**  
Potential solution to ice jam flooding: Salmon River, Idaho. Earickson, J., et al, MP 2131, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.15-25, 10 refs.  
Zufelt, J.E.  
Ice jams, Flooding, Water level, Flood control, Freezeup, River ice, Ice control, Design, Ice booms, United States—Idaho—Salmon River.  
The uppermost 140 miles of the Salmon River generates great quantities of frazil ice throughout Idaho's cold winters. A freeze-up ice jam forms at a slackwater region 27 miles downstream of the city of Salmon, Idaho every winter, and often progresses upstream to the city. As the ice jam moves through Salmon, the river level can rise 6 to 8 feet and cause extensive flooding. Flooding has occurred at least 32 times since 1900, and the 1982 flood caused \$1,000,000 in damages.
- 40-4582**  
Preliminary study on the ice jam at the Liujiaxia reach of the Yellow River. Yang, L., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.27-38, 1 ref.  
Ice jams, Water level, Reservoirs, Flooding, Ice cover thickness, Velocity, China—Yellow River.
- 40-4583**  
Prototype observation and study of ice jam at Hequ section of the Yellow River. Sun, Z., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.39-48.  
Ice jams, Ice cover thickness, Ice conditions, River ice, Air temperature, Water level, Analysis (mathematics), China—Yellow River.
- 40-4584**  
On the law of similarity of hydraulic model for ice flow. Sun, Z., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.49-59, 4 refs.  
Yang, B.  
Ice flows, Ice mechanics, Drift, River flow, Ice cover thickness, Hydraulics, Analysis (mathematics), Models.
- 40-4585**  
Winter traffic on the Trollhätte Canal and the Lake Vänern. Selve, T., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.63-74.  
Ice navigation, Ice conditions, River ice, Ice breaking, Channels (waterways), Seasonal variations, Icebreakers, Bubbling.
- 40-4586**  
Great Lakes—limited season extension. Argiroff, C., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.75-86, 7 refs.  
Weigum, L.E.  
Ice navigation, Lake ice, River ice, Oil spills, Environmental impact.
- 40-4587**  
Investigation of ice navigation properties of icebreakers and organization of icebreaking operations in river basins. Tronin, V.A., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.87-99, 4 refs.  
Poliakov, A.S., Malinowski, V.A.  
Ice navigation, Icebreakers, River ice, Ice breaking, Design.
- 40-4588**  
Two-dimensional plasticity and momentum model for ship resistance in level ice. Luk, C.H., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.101-112, 6 refs.  
Ice navigation, Ice breaking, Icebreakers, Ice strength, Analysis (mathematics).
- 40-4589**  
On the ice-breaking component in the level ice resistance. Nymán, T., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.113-124, 3 refs.  
Ice navigation, Ice breaking, Ice strength, Ice elasticity, Ice models, Flexural strength, Tests, Ships.
- 40-4590**  
Study on ice load and motion of storage barge system in ice. Norimatsu, Y., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.125-136, 10 refs.  
Kawasaki, T., Minami, T., Schwarz, J.  
Ice navigation, Ice loads, Offshore structures, Ice solid interface, Ice sheets, Ice conditions, Velocity, Floating structures, Analysis (mathematics), Models.
- 40-4591**  
Design and model testing of a river ice prow. Tatinclaux, J.C., MP 2132, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.137-150, 16 refs.  
Ice navigation, River ice, Ice conditions, Ice breaking, Design, Dams, Locks (waterways), Models, Tests.  
One of the tasks in the Corps of Engineers River Ice Management (RIM) program is to develop an ice prow capable of creating nearly ice-free channels in the vicinity of locks and dams on the Illinois and Ohio Rivers. Based on a literature survey the selected concept was that of a barge type attachment to be mounted ahead of a towboat. The prow is equipped with ice knives, and has a gently sloping bottom equipped with deflector vanes. The paper presents the results of model resistance tests which served to select the vane configuration and number of ice knives. A prototype of the prow is under final design for construction; field testing and demonstration are scheduled for winter 1986-87.
- 40-4592**  
Marine icing and spongy ice. Gates, E.M., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.153-163, 13 refs.  
Narten, R., Lozowski, E.P., Makkonen, L.  
Ship icing, Ice accretion, Spongy ice, Heat transfer, Unfrozen water content, Experimentation, Air temperature, Velocity, Models.
- 40-4593**  
Salt entrapment in spray ice. Makkonen, L., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.165-178, 22 refs.  
Icing, Ice growth, Sea spray, Ice salinity, Floating structures, Theories, Freezing, Sea ice, Ship icing, Offshore structures, Drift, Protective coatings.
- 40-4594**  
Icing of fishing vessels. Part 1: Splashing a ship with spray. Zakrzewski, W.P., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.170-194, 17 refs.  
Ship icing, Sea spray, Ice loads, Ice growth, Superstructures, Unfrozen water content, Mathematical models, Wind velocity.
- 40-4595**  
Icing of fishing vessels. Part 2: Ice growth rates and simulation of icing. Zakrzewski, W.P., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.195-207, 15 refs.  
Ship icing, Ice growth, Ice accretion, Ice loads, Sea spray, Heat balance, Analysis (mathematics), Water temperature, Models.
- 40-4596**  
New time-dependent ice accretion model for non-rotating cylinders. Szilder, K., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.209-220, 5 refs.  
Lozowski, E.P., Gates, E.M.  
Ice accretion, Icing, Heat balance, Analysis (mathematics), Models, Temperature effects, Time factor, Cylinders.
- 40-4597**  
Bubblers and pumps for melting ice. Ashton, G.D., MP 2133, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.223-234, 8 refs.  
Ice melting, Bubbling, Water temperature, Pumps, Water flow, Hydraulic jets, Analysis (mathematics).  
Air bubbling systems and submerged pumps have both been used to induce a jet-like flow of warm water against the underside of ice sheets resulting in ice melting. The mechanics of air bubbling systems for this purpose has been analyzed previously and analytical methods are available to evaluate their effectiveness. A similar analysis of the melting caused by pump systems is presented. A comparison of the effectiveness of bubblers and pumps is made in terms of power. Finally the advantages and disadvantages of the two kinds of systems are contrasted.
- 40-4598**  
Ice management at Dickinson Dam spillway crest gate. Burgi, P.H., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.235-247, 2 refs.  
Krogstad, D.E.  
Ice flows, Ice control, Ice booms, Dams, Pumps, Water temperature, Damage, Countermeasures, Design, Maintenance.
- 40-4599**  
Frazil ice control using pneumatic guns. Mussallii, Y.G., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.249-256, 4 refs.  
Ice control, Frazil ice, Tests, Equipment, Vibration, Design criteria, Acoustic measurement, Pressure.
- 40-4600**  
Experimental study of ice sluicing through the diversion tunnel of the Baishan Hydro-Power Project. Chen, C., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.257-268, 4 refs.  
Ice conditions, Ice deterioration, Ice jams, River ice, Sluices (hydraulic engineering), Ice breakup, Design, Ice models, Ice cover thickness, Ice mechanics.
- 40-4601**  
BIVA project. Lock, G.S.H., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.269-280, 10 refs.  
Ice growth, Heat pipes, River flow, Heat transfer, Fluid flow, Hydraulics.

## 40-4602

Role of fracture in limiting ice forces. Hallam, S.D., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.287-319, Refs. p.316-319.

Ice loads, Ice mechanics, Offshore structures, Ice cracks, Ice creep, Drift, Rheology, Bearing strength, Brittleness, Fracturing, Compressive properties, Tensile properties, Stress strain diagrams.

## 40-4603

Ice forces on multi-legged structures. Timco, G.W., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.321-337, Refs. p.335-337.

Ice loads, Offshore structures, Ice mechanics, Ice solid interface, Ice pressure, Ice sheets, Docks, Models, Dynamic loads.

## 40-4604

Flexural and buckling failure of floating ice sheets against structures. Sodhi, D.S., MP 2134, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.339-359, Refs. p.356-359.

Floating ice, Ice strength, Offshore structures, Flexural strength, Ice pressure, Ice solid interface, Ice deformation, Ice sheets, Stresses, Ice cover thickness, Ice adhesion.

This is a review of work on bending and buckling failure of floating ice sheets, along with the forces generated during ice-structure interaction. The focus is on the work published after 1980. Estimation of ice forces as a result of bending and buckling failure of an ice sheet can be made with a fair degree of confidence when the ice-structure interaction leads to one of the two modes of failure. The problem of multimodal failure of floating ice sheets needs further study.

## 40-4605

Pressure-area curve for ice. Sanderson, T.J.O., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.361-384, Refs. p.381-384.

Ice pressure, Ice solid interface, Structures, Tests, Stresses, Icebreakers, Analysis (mathematics).

## 40-4606

Ice scour surveys, statistics and forces. Chari, T.R., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.385-404, Refs. p.400-404.

Barrie, J.V. Ice scouring, Icebergs, Pressure ridges, Hydraulic structures, Ocean bottom, Bottom sediment, Bottom topography, Mathematical models, Stresses.

## 40-4607

Numerical and finite element techniques in calculation of ice-structure interaction. Jordaan, I.J., IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, Vol.2, [1986], p.405-440, Refs. p.435-440.

Ice solid interface, Ice mechanics, Ice loads, Structures, Flexural strength, Ice cracks, Damage, Ice pressure, Stress strain diagrams, Ice creep, Tests, Shear properties.

## 40-4608

Field techniques for ice force measurements. Croasdale, K.R., et al, IAHR Symposium on Ice, 8th, Iowa City, Aug. 18-22, 1986. Proceedings, [1986], p.443-482, Refs. p.469-474.

Frederking, R. Ice loads, Offshore structures, Ice solid interface, Ice pressure, Stresses, Strains, Measuring instruments, Tests.

## 40-4609

Mineralized plugging cements for finishing wells under complicated natural conditions. [Mineralizovannye tamponazhnye rastvory dlia tsementirovaniia skvazhin v slozhnykh usloviakh], Bakshutov, V.S., Moscow, Nedra, 1986, 272p., In Russian with English table of contents enclosed. 43 refs. Cements, Drilling fluids, Cement admixtures, Permafrost, Drilling fluids, Minerals, Concrete freezing, Concrete hardening.

## 40-4610

Grounded foundations for communication, and signaling, centralization and block system apparatus. [Svalnye fundamenty-zazemliteli apparatury STsB i svyazi], Sokhor, V.M., *Transportnoe stroitel'stvo*, June 1986, No.6, p.27-29, In Russian. 5 refs. Concretes, Electrical grounding, Piles, Foundations, Electrical properties, Permafrost beneath structures.

## 40-4611

Effective highly viscous polymer coating for transport-related structures. [Effektivnye vysokoviskozkie polimernye pokrytiia dlia transportnykh sooruzhenii], Roiak, G.S., et al, *Transportnoe stroitel'stvo*, June 1986, No.6, p.31-32, In Russian. 3 refs.

Glazman, F.B., Safronova, N.A. Steel structures, Frost resistance, Corrosion, Polymers, Insulation.

## 40-4612

Scheme of using the middle Yenisey and lower Angara rivers.

Mikhailov, L.P., et al, *Hydrotechnical construction*, Nov. 1985 (Pub. May 86), 19(11), p.567-573, Translated from *Gidrotekhnicheskoe stroitel'stvo*. Dotsenko, T.P., Smirnov, E.A., Shtaler, L.M. Electric power, Hydraulic structures, Concrete structures, Dams, Foundations, River basins, Industrial buildings.

## 40-4613

Hydraulic excavation in the wintertime in Siberia. Popov, I.U.A., et al, *Hydrotechnical construction*, Nov. 1985 (Pub. May 86), 19(11), p.573-576, Translated from *Gidrotekhnicheskoe stroitel'stvo*. 8 refs. Sadlet, B.V., Dziubenko, L.F.

Cold weather construction, Earthwork, Hydraulic fill, Dredging.

## 40-4614

Technology of hydraulic filling of structures from loessial loams with intensification of their dewatering. Melamut, D.L., et al, *Hydrotechnical construction*, Nov. 1985 (Pub. May 86), 19(11), p.576-581, Translated from *Gidrotekhnicheskoe stroitel'stvo*. 2 refs. Utiaganov, R.Z.

Earthwork, Hydraulic fill, Soil compaction, Loams, Loess.

## 40-4615

Role of plastic ice interaction in marginal ice zone dynamics.

Leppäranta, M., et al, *Journal of geophysical research*, Nov. 20, 1985, 90(C6), MP 1544, p.11,899-11,909, 17 refs. Hibler, W.D., III.

Ice edge, Sea ice, Ice cover thickness, Plastic flow, Wind direction, Wind velocity, Ice models.

Under appropriate conditions, the nonlinear nature of plastic ice interaction together with a nonlinear coupling between ice thickness characteristics and ice rheology can substantially modify the character of marginal ice zone dynamics. This paper examines the steady state ramifications of these nonlinearities by using a one-dimensional simplification of a two-level viscous plastic sea ice model. A series of idealized small-scale simulations (4-km resolution) is carried out with the model formulated in a moving Lagrangian grid in order to remove diffusion effects. Analytic solutions for the equilibrium plastic adjustment, case are also constructed. The results show that if the ice thickness distribution is allowed to equilibrate in response to a constant wind field, the thickness strength coupling will yield a sharp ice edge, with the compactness dropping rapidly to zero near the ice margin. (Auth. mod.)

## 40-4616

Internal wave dissipation under sea ice. Morison, J.H., et al, *Journal of geophysical research*, Nov. 20, 1985, 90(C6), p.11,959-11,966, 25 refs. Long, C.E., Levine, M.D.

Ocean waves, Pack ice, Boundary value problems, Turbulent boundary layer.

## 40-4617

Ice drift and regional meteorology in the southern Bering Sea: results from MIZEX West.

Reynolds, M., et al, *Journal of geophysical research*, Nov. 20, 1985, 90(C6), p.11,967-11,981, 22 refs. Pease, C.H., Overland, J.E.

Sea ice, Drift, Ice edge, Ice air interface, Ice water interface, Wind direction, Ocean currents, Wind velocity.

## 40-4618

Formation of thermoerosional niches into frozen bluffs due to storm surges on the Beaufort Sea coast. Kobayashi, N., *Journal of geophysical research*, Nov. 20, 1985, 90(C6), p.11,983-11,988, 18 refs. Coastal topographic features, Shore erosion, Storms, Beaufort Sea.

## 40-4619

Volcanic deposits in antarctic snow and ice. Delmas, R.J., et al, *Journal of geophysical research*, Dec. 20, 1985, 90(D7), p.12,901-12,920, 87 refs. Legend, M., Aristarain, A.J., Zanolini, F.

Ice sheets, Snow composition, Volcanic ash. Different methods that can be used to find volcanic acid deposits in snow and ice cores are compared: electrical conductivity, sulfate, and acidity measurements. Numerous snow and ice samples collected at several antarctic locations were analyzed.

The two major volcanic events recorded by H<sub>2</sub>SO<sub>4</sub> fallout in antarctic ice over the last century are the eruptions of Krakatoa (1883) and Agung (1963). Volcanic signals are particularly well defined at central antarctic locations apparently in relation to the low snow accumulation rates in these areas. Volcanic sulfuric acid in snow is not even partially neutralized by ammonia. The possible influence of antarctic volcanic activity on snow chemistry is also discussed, using the three recent eruptions of the Deception Island volcano as examples. Only one of them seems to have had a significant effect on the chemistry of snow at a location 200 km from the source. It is concluded that antarctic volcanic ice records are less complicated than Greenland records because of the limited number of volcanoes in the Southern Hemisphere and the apparently higher signal to background ratio for acidity in Antarctica than in Greenland. (Auth.)

## 40-4620

Atmospheric dust in polar ice and the background aerosol.

Gayley, R.I., et al, *Journal of geophysical research*, Dec. 20, 1985, 90(D7), p.12,921-12,925, 9 refs. Ram, M.

Atmospheric composition, Dust, Ice cores.

Measurements are made of insoluble particle size distributions covering the radius range 0.05-1.31 micron for 15 samples from a 3-year (1782-1785) section of ice core from Crête, central Greenland, and for a 2500-year-old, 2-year section of south pole ice. Insoluble particles in this range in the Northern Hemisphere background aerosol are in the radius range 0.05-0.13 micron, 30% are in the range 0.13-0.38 micron, and 10% are in the range 0.38-1.31 micron. The corresponding values for the Southern Hemisphere are 74, 22, and 4%. The small and large particle profiles for our Crête ice core section show similar variability features, but peaks in the large particles are much more pronounced. (Auth.)

## 40-4621

Uniaxial nonlinear viscoelastic constitutive relation for ice.

Harper, B.D., *Journal of energy resources technology*, June 1986, 108(2), p.156-160, 20 refs.

Ice deformation, Compressive properties, Viscoelasticity.

## 40-4622

Separation of a snowmelt hydrograph by stream conductance.

Kobayashi, D., *Journal of hydrology*, Apr. 1986, 84(1/2), p.157-165, 6 refs. Snowmelt, Runoff.

## 40-4623

Parameter values for snowmelt runoff modelling.

Martinez, J., et al, *Journal of hydrology*, May 1986, 84(3/4), p.197-219, Refs. p.217-219.

Rango, A. Snowmelt, Runoff.

## 40-4624

Sedimentation and stratigraphy at Eyjabakkajökull—an Icelandic surging glacier.

Martin, S., *Quaternary research*, Nov. 1985, 24(3), p.268-284, Refs. p.282-284.

Glacier surges, Periglacial processes, Sedimentation.

## 40-4625

Reliability of a fjord glacier's fluctuations for paleoclimatic reconstructions.

Mann, D.H., *Quaternary research*, Jan. 1986, 25(1), p.10-24, Refs. p.23-24.

Glacier oscillation, Calving, Climatic changes.

## 40-4626

Derivation and analysis of a McPhee-like damping term for inertially oscillating ice drift.

Swaters, G.E., *Journal of engineering mathematics*, 1985, 19(3), p.251-259, 10 refs.

Sea ice, Drift, Ocean currents.

## 40-4627

Sea ice forces and the state of technology of offshore arctic platforms.

Utt, M.E., *Journal of petroleum technology*, Jan. 1985, 37(1), p.21-26, 9 refs.

Sea ice, Ice pressure, Offshore structures.

## 40-4628

Coastal zone color scanner imagery in the marginal ice zone.

Maynard, N.G., *Marine Technology Society. Journal*, June 1986, 20(2), p.14-27, Refs. p.25-27.

Biomass, Ice edge, Remote sensing.

Imagery from the Coastal Zone Color Scanner (CZCS) from two different high latitude locations was analyzed to determine the potential as well as the limitations of the CZCS for studying mesoscale physical and biological oceanographic processes in the Arctic and Antarctic. The investigation focused on the marginal ice zone, a complex and dynamic interface between the atmosphere and the ocean which supports extraordinary concentrations of biomass. Imagery processed at the ice edge in the Denmark Strait and in the Norton Sound area of the Eastern Bering Sea confirms the usefulness of the CZCS in assessing pigment distribution as well as the physical processes driving biological production at high latitudes. Despite con-

straints imposed by cloud cover and algorithm limitations, the imagery clearly showed ice edge blooms, eddy formation, circulation patterns, and water mass boundaries. (Auth.)

40-4629

Oceans and ice measurements from Canada's RADARSAT.

Freeman, N.G.S., et al, *Marine Technology Society Journal*, June 1986, 29(2), p.87-100, 8 refs.

McNutt, L.  
Remote sensing, Spacecraft, Sea ice distribution, Icebergs.

40-4630

Dispersion of sea ice in the Bering Sea.

Martin, S., et al, *Journal of geophysical research*, July 1985, 90(C4), p.7223-7226, 10 refs.

Thorndike, A.S.

Sea ice, Drift, Ice floes, Bering Sea.

40-4631

Wind-induced stratified ocean response in the ice edge region: an analytical approach.

Sjöberg, B., et al, *Journal of geophysical research*, July 1985, 90(C4), p.7273-7285, 16 refs.

Mork, M.

Ice edge, Ice cover effect, Ocean currents, Upwelling.

40-4632

Sea ice: multiyear cycles and white ice.

Ledley, T.S., *Journal of geophysical research*, June 1985, 90(D3), p.5676-5686, 15 refs.

Sea ice, Ice cover thickness, Snow cover effect, Periodic variations.

40-4633

Cold climate utilities manual.

Smith, D.W., ed, MP 2135, Montreal, Canadian Society of Civil Engineering, 1986, var.p., Refs. passim.

Reed, S.C.

Cold weather construction, Cold weather operation, Engineering, Utilities, Water treatment, Waste disposal, Pipelines, Heat loss, Manuals, Environmental protection.

40-4634

Ions and moisture migration and frost heave in freezing Morin clay.

Qiu, G., et al, *Journal of glaciology and geocryology*, Mar. 1986, 8(1), MP 1970, p.1014, 9 refs., In Chinese with English summary.

Chamberlain, E.J., Iskandar, I.K.

Frost heave, Soil water migration, Ions, Clay soils, Soil chemistry, Water content, Freezing rate, Tests.

Sixteen specimens made of Morin Clay with a saturation percentage of 86% were subjected to freezing tests in open system fed by distilled water, NaCl solution, CaCl<sub>2</sub> solution and Na<sub>2</sub>SO<sub>4</sub> solution respectively. Before freezing test, specimens were homogeneous in water content but heterogeneous in chemical composition with a vertical concentration gradient. After freezing test, both water content and the dominant-anion content in frozen part of the soil samples increase; this means that not only moisture but also ions were migrating toward the freezing zone during tests.

40-4635

Tensile strength of frozen silt.

Zhu, Y., et al, *Journal of glaciology and geocryology*, Mar. 1986, 8(1), MP 1971, p.15-28, 9 refs., In Chinese with English summary.

Carbee, D.L.

Frozen ground strength, Tensile properties, Strain tests, Sediments, Soil compaction, Density (mass/volume), Temperature effects.

Constant strain-rate tension tests were conducted on remolded saturated frozen Fribanks silt at various temperatures, strain rates and densities. It is found that the critical strain rate of the ductile-brittle transition does not depend upon temperature, but varies with density. It has a value of 0.01/s for the silt with medium density and 0.0005/s for low density. The peak tensile strength considerably decreases with decreasing strain rate for ductile failure, while it slightly decreases with increasing strain rate for brittle fracture. The failure strain remains almost the same for temperatures lower than about -2°C, but it varies with density and strain rate. The initial tangent modulus is found not to depend upon strain rate, but increases with decreasing temperature and density.

40-4636

Distribution characteristic of permafrost of Tongtian River basin on Qinghai-Xizang Plateau and its growth tendency in melting area.

Huang, D., *Journal of glaciology and geocryology*, Mar. 1986, 8(1), p.29-39, 6 refs., In Chinese with English summary.

Permafrost distribution, Permafrost depth, Landforms, Climatic factors, Mass balance, Ground melting, Tectonics, China—Qinghai-Xizang Plateau.

40-4637

Preliminary chemical study on snow and ice in mountain glaciers of China.

Wang, P., *Journal of glaciology and geocryology*, Mar. 1986, 8(1), p.40-51, 22 refs., In Chinese with English summary.

Mountain glaciers, Glacier ice, Ice composition, Snow composition, Runoff, Isotope analysis, Chemical analysis, Meltwater, China.

40-4638

Wet snow avalanche with heavy harmfulness in China.

Wang, Y., *Journal of glaciology and geocryology*, Mar. 1986, 8(1), p.52-60, 4 refs., In Chinese with English summary.

Avalanche formation, Wet snow, Snow temperature, Climatic factors, Distribution, Mountains, Seasonal variations, China.

40-4639

Debris flow induced by ice lake burst in the Tangbalang Gully, Gongbujiangda, Xizang (Tibet).

Lu, R., et al, *Journal of glaciology and geocryology*, Mar. 1986, 8(1), p.61-71, 2 refs., In Chinese with English summary.

Li, D.

Soil erosion, Watersheds, Glacial hydrology, Drainage, Moraines, Mountains, Glacier melting, Damage, Glacial lakes, Climatic changes, Tibet.

40-4640

Preliminary investigation on glaciation in Siguniang mountainous region of Wenchuan County in Sichuan Province.

Liu, S., et al, *Journal of glaciology and geocryology*, Mar. 1986, 8(1), p.72-82, 3 refs., In Chinese with English summary.

Chai, Z., Chen, J.

Glaciation, Mountain glaciers, Cirques, Distribution, Paleoclimatology, Valleys, Moraines, Geomorphology, China—Siguniang Mountains.

40-4641

Is there a so-called "Lishan Glacial Period"?

Yan, J., et al, *Journal of glaciology and geocryology*, Mar. 1986, 8(1), p.83-88, 4 refs., In Chinese with English summary.

Yan, Y.

Glaciation, Paleoclimatology, Sediments, Pleistocene, Mountains, Floods.

40-4642

Significance and expression of the terms used in the routine observation of deposited snow.

Qiu, J., *Journal of glaciology and geocryology*, Mar. 1986, 8(1), p.89-96, In Chinese.

Snow cover, Terminology, Snow surface, Snow strength, Avalanches, Profiles.

40-4643

Satellite monitoring of snow cover in Qilian Mountain and analysis on snowmelt runoff in Hexi District.

Zeng, Q., et al, *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.295-304, 13 refs., In Chinese with English summary.

Zhang, S., Jin, D.

Snow cover distribution, Snow accumulation, Remote sensing, Runoff, Snowmelt, Seasonal variations, River flow, Mountains, Snow hydrology, China—Qilian Mountain.

40-4644

Study of the strain and stress in the bottom layer of Glacier No.1 in the Urumqi River headwaters—Investigation on artificial ice tunnel, Part 2.

Huang, M., et al, *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.305-315, 5 refs., In Chinese with English summary.

Wang, Z., Song, G.

Glacier ice, Strains, Shear stress, Ice tunnels, Ice physics, Compressive properties.

40-4645

Preliminary reconstruction of the temperature curve of the last major climatic cycle in North China.

Sun, J., *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.317-322, 14 refs., In Chinese with English summary.

Permafrost, Climatic changes, Paleoclimatology, Temperature variations, Glaciation, Periglacial processes, Vegetation.

40-4646

Climatic condition in the formation and evolution of permafrost in Northeast China.

Xie, Y., *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.323-330, 15 refs., In Chinese with English summary.

Permafrost distribution, Climatic changes, Paleoclimatology, Ice wedges, Periglacial processes, China.

40-4647

Preliminary analysis on the effect of thermal insulation materials on cut slope of the roadbed at Fenghuoshan.

Shang, J., *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.331-334, In Chinese with English summary.

Roadbeds, Thermal insulation, Thaw depth, Mountains, Construction materials, Slope stability, China—Fenghuoshan.

40-4648

Calculation of frost heave force based on heave deformation in the scope restrained by foundation.

Zhou, Y., *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.335-346, 4 refs., In Chinese with English summary.

Frost heave, Loads (forces), Foundations, Soil strength, Deformation, Rheology.

40-4649

General arrangement and structure style for preventing structure from frost damage.

Wang, S., *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.347-352, In Chinese.

Frost heave, Foundations, Roadbeds, Damage, Countermeasures, Walls.

40-4650

On the genesis of the first moraine on the Glacier No.1 at the head of Urumqi River, Tianshan.

Li, S., *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.353-359, 1 ref., In Chinese with English summary.

Moraines, Glacial deposits, Geomorphology, Shear stress, Mountains, Origin, China—Tian Shan.

40-4651

Some views on presentation of glacial landforms on large scale map.

Chen, J., et al, *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.361-365, 3 refs., In Chinese with English summary.

Mi, D.

Landforms, Periglacial processes, Distribution, Glaciology, Mapping.

40-4652

Designing principle and applied effect of pocket multi-sensor ice-snow thermistor thermometer.

Li, W., et al, *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.367-371, In Chinese with English summary.

Zhang, Y.

Thermistors, Ice temperature, Snow temperature, Measuring instruments, Temperature measurement.

40-4653

Outline of XVIII general assembly Hamburg of the International Union of Geodesy and Geophysics (IUGG) and comment of remote sensing for ice snow.

Zeng, Q., *Journal of glaciology and geocryology*, Dec. 1985, 7(4), p.373-380, 23 refs., In Chinese.

Ice surveys, Snow surveys, Remote sensing, Meetings, Geodetic surveys, Geophysical surveys.

40-4654

All-Union symposium on the scientific foundations of the optimization, forecasting and protection of natural environments, Moscow, April, 1986. Summaries.

(Teziy dokladov), Vsesoiuznyy simpozium "Nauchnye osnovy optimizatsii, prognoza i okhrany prirodnoi sredy", Moscow, April 1986, Moscow, 1986, 417p., In Russian. For selected summaries see 49-4655 through 40-4660.

Chupakhin, V.M., ed.

Taiga, Plant ecology, Paludification, Cryogenic soils, Plant physiology, Land reclamation, Environmental protection, Nutrient cycle, Landscape types, Soil water migration.

40-4655

Ecology and productivity of a landscape after placer mining. (Ekologiya i produktivnost' landschafta posle razrabotki rossypeli).

Chazov, B.A., et al, Vsesoiuznyy simpozium "Nauchnye osnovy optimizatsii, prognoza i okhrany prirodnoi sredy", Moscow, April, 1986. Teziy dokladov (All-Union symposium on the scientific foundations of the optimization, forecasting and protection of natural environments, Moscow, April, 1986. Summaries) edited by V.M. Chupakhin, Moscow, 1986, p.119-121, In Russian.

Paiusova, E.A., Prokop'ev, M.N., Morozova, V.V. Placer mining, Environmental impact, Soil erosion, Revegetation, Cryogenic soils.

40-4656

**Cartographic modeling of land-use processes for providing complex regional environmental protection schemes.** [Kartograficheskoe modelirovanie opol'nykh protsessov pri obespechenii territorial'nykh kompleksov skhem okhrany prirody]. Ivchenko, N.K., et al. Vsesoiuznyi simpozium "Nauchnye osnovy optimizatsii, prognoza i okhrany prirodnoi sredy", Moscow, April, 1986. Tezisy dokladov (All-Union symposium on the scientific foundations of the optimization, forecasting and protection of natural environments, Moscow, April, 1986. Summaries) edited by V.M. Chupakhin, Moscow, 1986, p.178-179, In Russian.

**Kazantsev, N.N.**  
Mapping, Landslides, Environmental protection, Models, Soil pollution, Human factors, Soil erosion, Slope processes.

40-4657

**Evaluation of forest resources by remote sensing of the nature and degree of their disturbance.** [Distantionnaia otsenka sostoiianiia lesnykh resursov po kharakteru i stepeni ikh narusheniia]. Gorozhankina, S.M., et al. Vsesoiuznyi simpozium "Nauchnye osnovy optimizatsii, prognoza i okhrany prirodnoi sredy", Moscow, April, 1986. Tezisy dokladov (All-Union symposium on the scientific foundations of the optimization, forecasting and protection of natural environments, Moscow, April, 1986. Summaries) edited by V.M. Chupakhin, Moscow, 1986, p.292-294, In Russian.

**Konstantinov, V.D.**  
Taiga, Remote sensing, Spaceborne photography, Photointerpretation, Paludification, Peat, Soil erosion, Human factors.

40-4658

**Dynamics of the energy-matter balance in pine ecosystems of northern Europe.** [Dinamika balansov veshchestva i energii v sosnovykh ekosistemakh Evropeiskogo Severa]. Ziabchenko, S.S., et al. Vsesoiuznyi simpozium "Nauchnye osnovy optimizatsii, prognoza i okhrany prirodnoi sredy", Moscow, April, 1986. Tezisy dokladov (All-Union symposium on the scientific foundations of the optimization, forecasting and protection of natural environments, Moscow, April, 1986. Summaries) edited by V.M. Chupakhin, Moscow, 1986, p.294-297, In Russian.

**Ivanichikov, A.A.**  
Taiga, Solar radiation, Forestry, Nutrient cycle, Forest fires, Revegetation, Plant ecology, Subpolar landscapes, Plant physiology, Biomass.

40-4659

**Forecasting the paludification in some types of South Karelian landscapes.** [Prognoz zabolachivaniia v nekotorykh tipakh landshtafov Iuzhnoi Karelii]. Kolomytsev, V.A., Vsesoiuznyi simpozium "Nauchnye osnovy optimizatsii, prognoza i okhrany prirodnoi sredy", Moscow, April, 1986. Tezisy dokladov (All-Union symposium on the scientific foundations of the optimization, forecasting and protection of natural environments, Moscow, April, 1986. Summaries) edited by V.M. Chupakhin, Moscow, 1986, p.297-299, In Russian.

**Forest land, Cryogenic soils, Paludification, Forecasting, Topographic surveys.**

40-4660

**Derivation of formulas for the biogeochemical cycle of taiga geosystems.** [Raschet formul biogeokhimicheskogo krugovorota taizhnykh geosistem]. Nechaeva, E.G., Vsesoiuznyi simpozium "Nauchnye osnovy optimizatsii, prognoza i okhrany prirodnoi sredy", Moscow, April, 1986. Tezisy dokladov (All-Union symposium on the scientific foundations of the optimization, forecasting and protection of natural environments, Moscow, April, 1986. Summaries) edited by V.M. Chupakhin, Moscow, 1986, p.349-351, In Russian.

**Taiga, Cryogenic soils, Nutrient cycle, Permafrost hydrology, Soil water migration.**

40-4661

**Ecology of swamp plants, swamp habitats and peat deposits.** [Voprosy ekologii rastenii bolot, bolotnykh mestoobitaniil i torfiannykh zalezhe]. Lopatin, V.D., et al. Petrozavodsk, 1986, 190p., In Russian. For selected papers see 40-4662 through 40-4666. Refs. passim.

**Iudina, V.F.**  
Moraines, Plant ecology, Land reclamation, Swamps, Environmental impact, Forests, Plains, Ecosystems, Cryogenic soils, Paludification, Hydrology.

40-4662

**Ridge-pool complexes, their distribution and relation to different swamp types.** [K voprosu o prirode griadovo-mochazhinnykh kompleksov i svyazi ikh rasprostraneniia s razlichnymi klassami bolotnykh urochishch]. Galkina, E.A., Voprosy ekologii rastenii bolot, bolotnykh mestoobitaniil i torfiannykh zalezhe (Problems in the ecology of swamp plants, swamp habitats and peat deposits) edited by V.D. Lopatin and V.F. Iudina, Petrozavodsk, 1986, p.30-41, In Russian. Refs. p.39-41.

**Swamps, Plant ecology, Mosses, Moraines, Peat, Microrelief, Hydrology, Soil water migration.**

40-4663

**Changes in vegetational covers of oligotrophic sphagnum ridge-and-basin facies due to drainage.** [Izmeneniie rastitel'nogo pokrova oligotrofnogo sfagnovogo griadovo-mochazhinno-fatsii pod vlianiem osusheniia]. Grabovik, S.I., Voprosy ekologii rastenii bolot, bolotnykh mestoobitaniil i torfiannykh zalezhe (Problems in the ecology of swamp plants, swamp habitats and peat deposits) edited by V.D. Lopatin and V.F. Iudina, Petrozavodsk, 1986, p.48-59, In Russian. 8 refs.

**Ecosystems, Plant ecology, Paludification, Mosses, Plant physiology, Taiga, Swamps, Cryogenic soils, USSR—Karelia.**

40-4664

**Temperature regime of the active soil layer and the adjacent layer of air in South Karelian swamps.** [Temperaturnyi rezhim deiatel'nogo sloia pochvy i prizemnogo sloia vozdukh na bolotakh Iuzhnoi Karelii]. Orlov, E.D., Voprosy ekologii rastenii bolot, bolotnykh mestoobitaniil i torfiannykh zalezhe (Problems in the ecology of swamp plants, swamp habitats and peat deposits) edited by V.D. Lopatin and V.F. Iudina, Petrozavodsk, 1986, p.59-92, In Russian. 6 refs.

**Active layer, Soil temperature, Soil air interface, Plant ecology, Swamps, Heat transfer, Seasonal variations, Thermal regime, Cryogenic soils.**

40-4665

**Palynological studies of swamps in moraine plains of Central Karelia.** [K palinologicheskoiu izucheniiu bolot morennykh ravnin Srednei Karelii]. Filimonova, L.V., Voprosy ekologii rastenii bolot, bolotnykh mestoobitaniil i torfiannykh zalezhe (Problems in the ecology of swamp plants, swamp habitats and peat deposits) edited by V.D. Lopatin and V.F. Iudina, Petrozavodsk, 1986, p.122-132, In Russian. 11 refs.

**Swamps, Mosses, Palynology, Plant ecology, Mapping, Moraines, Peat, Taiga, Forest canopy.**

40-4666

**Microelements in peat deposits of Karelian low and transition bogs.** [Mikroelementy v torfiannykh zalezhakh nizinnnykh i perekhodnykh bolot Karelii]. Kuznetsov, O.L., et al. Voprosy ekologii rastenii bolot, bolotnykh mestoobitaniil i torfiannykh zalezhe (Problems in the ecology of swamp plants, swamp habitats and peat deposits) edited by V.D. Lopatin and V.F. Iudina, Petrozavodsk, 1986, p.140-157, In Russian. 22 refs.

**Toikka, M.A.**  
Peat, Swamps, Soil composition, Microelement content, Landscape types, Soil water migration.

40-4667

**Coupled ice-ocean dynamics in the marginal ice zones: upwelling/downwelling and eddy generation.** Hakkinen, S., *Journal of geophysical research*, Jan. 15, 1986, 91(C1), p.819-832, 23 refs.

**Ice edge, Sea ice, Ice water interface, Upwelling.**

40-4668

**Characteristics of Arctic winter sea ice from satellite multispectral microwave observations.** Comiso, J.C., *Journal of geophysical research*, Jan. 15, 1986, 91(C1), p.975-994, 31 refs.

**Sea ice distribution, Remote sensing, Microwaves, Ice cover, Physical properties.**

40-4669

**Satellite remote sensing over ice.** Thomas, R.H., *Journal of geophysical research*, Feb. 15, 1986, 91(C2), p.2493-2502, 21 refs.

**Ice sheets, Sea ice, Icebergs, Remote sensing, Topographic features.**

Satellite remote sensing provides unique opportunities for observing ice-covered terrain. Passive microwave data give information on snow cover on land, sea ice extent and type, and zones of summer melting on the polar ice sheets, and they have the potential of estimating snow accumulation rates on these ice sheets. All-weather, high-resolution imagery of sea ice is obtained by using synthetic aperture radars, and ice movement vectors can be deduced by comparing sequential images of the

same region. Radar altimetry data provide highly detailed information on ice sheet topography and have the potential of deducing thickening/thinning rates from repeat surveys. The coastline of Antarctica can be mapped accurately using altimetry data, and the size and spatial distribution of icebergs can be monitored. Altimetry data also distinguish open ocean from pack ice, and they give an indication of sea ice characteristics. (Auth.)

40-4670

**Estimating open pack ice parameters using wind field and remotely sensed data.** Feldman, U., *Journal of geophysical research*, Feb. 15, 1986, 91(C2), p.2503-2509, 37 refs.

**Sea ice, Pack ice, Ice cover thickness, Wind (meteorology), Drift, Beaufort Sea.**

40-4671

**Problems and future directions in remote sensing of the oceans and troposphere: a workshop report.** Atlas, D., et al. *Journal of geophysical research*, Feb. 15, 1986, 91(C2), p.2525-2548, Refs. p.2547-2548.

**Sea ice, Remote sensing, Instruments.**

40-4672

**Comment on "Sea ice: multiyear cycles and white ice" by T.S. Ledley.** Untersteiner, N., et al. *Journal of geophysical research*, Feb. 15, 1986, 91(C2), p.2667-2670, Includes reply by Ledley. For article being commented on see 40-4632. 9 refs.

**Ledley, T.S.**

**Sea ice, Periodic variations, Climate, Models.**

40-4673

**Subsea trenching in the Arctic.** Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1981, CR 81-17, 31p., ADA-108 341, 44 refs.

**Dredging, Ocean bottom, Pipe laying, Ice scoring, Ice action, Equipment, Velocity, Icebergs, Pressure ridges, Protection.**

Environmental conditions are described for the continental shelf of the western Arctic, and for the shelf of Labrador and Newfoundland. Special emphasis is given to the gouging of bottom sediments by ice pressure ridges and icebergs, and an approach to systematic risk analysis is outlined. Protection of subsea pipelines and cables by trenching and direct embedment is discussed, touching on burial depth, degree of protection, and environmental impact. Conventional land techniques can be adapted for trenching across the beach and through the shallows, but in deeper water special equipment is required. The devices discussed include hydraulic dredges, submarine dredges, plows, rippers, water jets, disc saws and wheel ditchers, ladder trenchers and chain saws, routers and slot millers, ladder dredges, vibratory and percussive machines, and blasting systems. Consideration is given to the relative merits of working with seabed vehicles, or alternatively with direct surface support from vessels or from the sea ice.

40-4674

**Measurement of ground dielectric properties using wide-angle reflection and refraction.** Arcone, S., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1982, CR 82-06, 11p., ADA-119 596, 11 refs.

**Delancy, A.J.**

**Soil physics, Dielectric properties, Radar echoes, Geophysical surveys, Refraction, Equipment, Wave propagation.**

The interpretation of continuous radar profiles requires an alternative geophysical means of obtaining ground dielectric information. Ground dielectric properties were measured using wide-angle reflection and refraction (WARR) soundings with a ground-probing radar set that transmits pulses of a few nanoseconds duration. The investigations, carried out over sandy gravel in interior Alaska, provided dielectric data to about a 5-m depth. The WARR soundings were displayed as individual traces allowing interference between separate events and dispersion to be observed, and the soundings were compared with continuous radar and resistivity profiles conducted concurrently to extract the maximum amount of dielectric information. The dielectric constants, derived mainly from the direct ground waves propagating along the surface, ranged from 2.9 to 7.4. Dielectric values interpreted for one site predicted the possibility of a refracted event which may have occurred during one of the soundings.

40-4675

**Laboratory measurements of soil electric properties between 0.1 and 5 GHz.** Delancy, A.J., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1982, CR 82-10, 12p., ADA-115 126.

**Arcone, S.A.**

**Permafrost physics, Soil physics, Dielectric properties, Electromagnetic prospecting, Wave propagation, Soil water, Ground ice, Sands, Sediments, Reflection.** Dielectric measurements have been performed on silt and sand samples from permafrost areas using time domain reflectometry. The sample temperatures were varied from +25°C to -25°C, and volumetric water content was varied between oven-dry and 0.55 g H<sub>2</sub>O/cc. The data were processed for frequencies between 0.1 and 5.0 GHz. The results show a constant K' and

a low  $K'$  for frequencies up to 1 GHz. A frequency dependence seen on the data above 2 GHz is probably the result of unfrozen, adsorbed water. At moisture levels near saturation at all temperatures, these soils have excellent propagation characteristics for ground-probing radar operating below 0.3 GHz. Massive ice should be easily detectable in permafrost within a few degrees of 0 C.

## 40-4676

**Ice growth on Post Pond, 1973-1982.**

Gow, A.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Feb. 1983, CR 83-04, 25p., ADA-126 334, 15 refs.

Govoni, J.W.

**Ice growth, Ice deterioration, Ponds, Snow ice, Ice cover thickness, Meteorological factors, Seasonal variations, Ice models, Degree days, Stefan problem, United States—New Hampshire—Post Pond.**

Measurements and analysis of seasonal ice growth and decay on Post Pond, New Hampshire, for the period 1973-1982 are presented. Observations included ice thickness measurements, examination of the various ice types contributing to the ice cover, and measurements of meteorological parameters for correlation with and modeling of the ice growth process. The overall nature of ice growth and decay (ice loss) on Post Pond has been ascertained, the seasonal variability in the timing of freeze-up and ice-out and the duration of the ice cover have been determined, and the relationship of ice growth to freezing-degree-day records evaluated on the basis of a Stefan conduction equation modified to deal with ice sheets covered with or free of snow. Ice growth occurs predominantly by the direct freezing of lake water, but snow ice may compose as much as 50% of the ice cover in winters with higher than average snowfall. Freeze-up leading to the establishment of a stable ice cover occurs during the 4-week period from the end of November to the end of December. Maximum seasonal ice thicknesses were from 45 to 67 cm and are generally attained during the first two weeks of March; ice-out, marking the final disappearance of ice from Post Pond, usually occurs by the third week of April. The overall rate of ice loss is three to four times that of ice growth, and is dominated initially by melting from the top. As much as 50% of the ice may be lost in this way before the onset of any bottom melting. Final dissipation of the ice cover is usually expedited by candelizing resulting from preferential melting and disintegration of the ice at crystal boundaries.

## 40-4677

**Effect of vessel size on shoreline and shore structure damage along the Great Lakes connecting channels.** Wuebben, J.L., *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1983, SR 83-11, 62p., ADA-134 887, 13 refs.

**Shores, Channels (waterways), Ice loads, Ships, Structures, Damage, Velocity, Great Lakes.**

In conjunction with the Great Lakes connecting channels and harbors study, this report examines the potential damage to the shore and shore structures due to an increase in vessel size. The areas considered in this report are the United States shorelines along the St. Marys, St. Clair and Detroit rivers. The potential for shoreline or shore structure damage due to an increase in vessel size was reviewed on both a conceptual and site-specific basis. Ship-induced waves were ruled out as a damage mechanism since the analysis showed that the contemplated increases in vessel size would not significantly affect wave heights in the nearshore zone. Propeller wash was discounted for similar reasons. Ship-induced drawdown was determined to be the major potential damage mechanism. While larger ships potentially produce more damage, this potential is significant only in severely restricted channel sections for the size increase considered here. By far the most significant factor in ship-related damage potential is vessel speed. In almost all areas the effect of an increase in vessel size could be eliminated by a reduction in vessel speed of 1-2 mph.

## 40-4678

**Life and condition of its existence in the pelagic zone of the Barents Sea.** [Zhizn' i uslovia ee sushchestvovaniia v pelagialii Barentseva moria]. Matishov, G.G., ed, Apatity, 1985, 218p., In Russian with abridged English table of contents enclosed. Refs. p.200-216.

**Algae, Bibliographies, Bottom sediment, Solar radiation, Sea water, Continental shelves, Plant ecology, Bottom topography, Sea water freezing, Biomass, Plant physiology, Barents Sea.**

## 40-4679

**Permafrost landscapes in the economic development zone of the Lena-Aldan interfluvial area.** [Merzlotnye landschafty zony osvoeniia Leno-Aldanskogo mezhdurech'ia]. Bosikov, N.P., et al, Yakutsk, 1985, 124p., In Russian with English table of contents enclosed. Refs. p.113-123.

Vasil'ev, I.S., Fedorov, A.N.

**Thermokarst, Landscape types, Environmental protection, Alasay, Permafrost hydrology, Maps, Forest land, Cryogenic soils, Permafrost distribution, Steppes, Soil erosion.**

## 40-4680

**P-wave anisotropy in the high polar ice of East Antarctica.**

Blankenship, D.D., Madison, University of Wisconsin, 1982, 143p., M.S. thesis. Refs. p.106-110.

**Anisotropy, Ice crystals, Ice structure, Ice physics, Seismic reflection, Seismic refraction, Ice models, Antarctica—Dome C.**

Observations indicate that the ice in the vicinity of Dome C, high on the inland ice sheet of East Antarctica, is transversely isotropic with a vertical axis of anisotropy. The functional form of the P-wave slowness surface observed is consistent with one obtained from a model employing the measured seismic anisotropy of single-crystal ice at 10C. The only ambiguity in the observed slowness surface is that its shape depends upon the average "vertical" velocity (actually the velocity in a direction normal to the basal reflector) used to determine the thickness of the ice sheet. (Auth. mod.)

## 40-4681

**Reduction of weather effects in the calculation of sea ice concentration from microwave radiances.**

Gloersen, P., et al, *Journal of geophysical research*, Mar. 15, 1986, 91(C3), p.3913-3919, 9 refs.

Cavalieri, D.J.

**Sea ice distribution, Microwaves, Ice edge, Remote sensing, Weather.**

## 40-4682

**Effects of operation of a man-made gravel island—Duck Island unit no.1.**

Evans, C.D., Alaska, University, Arctic Environmental Information and Data Center, Nov. 1978, 10p. + app., Refs. p.7-10.

AEIDC No. QH541.5 A7 A5154

**Artificial islands, Offshore structures, Ice conditions, Gravel, Offshore drilling, Sediment transport, Marine biology, Ice cover effect.**

## 40-4683

**Uranium series dating of Allan Hills ice.**

Fireman, E.L., *Journal of geophysical research*, Mar. 30, 1986, 91(B4), Lunar and Planetary Science Conference, 16th. Proceedings, Part 2, p.D539-D544, Also correction sheet for this item, Ibid. 1(B8):8393, July 10, 1986. 12 refs.

**Ice sheets, Ice dating, Radioactive age determination, Antarctica—Allan Hills.**

Uranium 238 decay series nuclides dissolved in Antarctic ice samples were measured. Ice from the Allan Hills, Cul de Sac site, that contains a large concentration of fine volcanic glass shards, has high Ra-226, Th-230, and U-234 activities but similarly low U-238 activities compared to antarctic ice samples without volcanic shards. The Ra-226, Th-230, and U-234 excesses are proportional to the shard content. The U-238 decay series results are consistent with the assumption that alpha decay products recoiled into the ice from the fine shards. The age of the Cul de Sac ice is 325,000 yr from this method of uranium series dating.

## 40-4684

**Formulation of ice shelf dynamic boundary conditions in terms of a Coulomb rheology.**

MacAyeal, D.R., et al, *Journal of geophysical research*, July 10, 1986, 91(B8), p.8177-8191, 60 refs.

Shabtaie, S., Bentley, C.R., King, S.D.

**Ice shelves, Rheology, Ice mechanics, Boundary value problems, Antarctica—Ross Ice Shelf.**

Coastal boundaries where fast flowing ice shelves shear past stagnant, grounded ice are typically riven with surface crevasses, seawater-filled basal crevasses, and tidal strand cracks. A boundary condition is formulated describing stress transmission through these fractured boundaries in terms of the Coulomb law. As a result of this formulation, agreement between finite element simulations of the Ross Ice Shelf flow and field observations is improved over agreement obtained with formulations which do not account for ice failure. The results additionally suggest that shear stress transmitted through ice shelf boundaries is lower than previously thought. (Auth.)

## 40-4685

**Ice banding as a response to the coupled ice-ocean system to temporally varying winds.**

Häkkinen, S., *Journal of geophysical research*, Apr. 15, 1986, 91(C4), p.5047-5053, 20 refs.

**Sea ice, Ice edge, Ice structure, Rheology, Wind (meteorology).**

## 40-4686

**Mixed layer beneath melting sea ice in the marginal ice zone using a one-dimensional turbulent closure model.**

Ikeda, M., *Journal of geophysical research*, Apr. 15, 1986, 91(C4), p.5054-5060, 13 refs.

**Sea ice, Ice edge, Sea water, Models.**

## 40-4687

**Modeling of storm surges in the Bering Sea and Norton Sound.**

Johnson, W.R., et al, *Journal of geophysical research*, Apr. 15, 1986, 91(C4), p.5119-5128, 34 refs.

Kowalik, Z.

**Wind (meteorology), Sea ice, Sea water, Stresses, Storms, Bering Sea, United States—Alaska—Norton Sound.**

## 40-4688

**Variations in brightness temperature over cold first-year sea ice near Tuktoyaktuk, Northwest Territories.**

Lohanick, A.W., et al, *Journal of geophysical research*, Apr. 15, 1986, 91(C4), p.5133-5144, 14 refs.

Grenfell, T.C.

**Sea ice, Radiometry, Brightness, Snow depth, Ice salinity, Brines, Temperature measurement.**

## 40-4689

**Estimating ice thickness and internal and stress forces in pack ice using Lagrangian data.**

Lewis, J.K., et al, *Journal of geophysical research*, July 15, 1986, 91(C7), p.8537-8541, 10 refs.

Crissman, R.D., Denner, W.W.

**Pack ice, Ice cover thickness, Ice pressure, Wind (meteorology), Beaufort Sea.**

## 40-4690

**MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports.**

Johannessen, O.M., ed, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1984, SF 84-29, 176p., ADA-148 986, Refs. passim. For selected papers see 40-4691 through 40-4703.

Horn, D.A., ed.

**Ice physics, Drift stations, Ice edge, Sea ice, Remote sensing, Oceanography, Acoustic measurement, Marine biology, Ice floes.**

## 40-4691

**Polar Queen drift, MIZEX 84.**

McPhee, M.G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.23-26. ADA-148 986.

**Drift stations, Ice conditions, Ice floes, Ships, Drift, Velocity.**

## 40-4692

**Polar Queen turbulence frame experiment.**

McPhee, M.G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.35-37. ADA-148 986.

**Ocean currents, Turbulent flow, Ice conditions, Drift, Water flow, Water temperature, Ice mechanics.**

## 40-4693

**MIZEX-84 oceanography cruise report, Krithjorn (POLARQUEEN).**

Svendsen, E., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.40-42. ADA-148 986.

**Ocean currents, Ice conditions, Drift stations, Oceanography, Ice floes, Ice mechanics.**

## 40-4694

**Sea wave measurements on board M/S Valdivia during MIZEX '84.**

Ziemer, F., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.51-53. ADA-148 986, 2 refs.

**Ocean waves, Ice cover effect, Ice edge, Sea ice, Wind velocity, Ocean currents.**

40-4695

MIZEX 84 mesoscale sea ice dynamics: post operations report.

Hibler, W.D., III, et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MP 1257, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.66-69. ADA-148 986.

Leppäranta, M., Decato, S., Alverson, K. Ice mechanics, Sea ice, Ice conditions, Drift stations, Ice edge, Measuring instruments.

40-4696

Scott Polar Research Institute Programme on ice edge kinematics, waves and aerial photography during MIZEX-84.

Wadhams, P., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.70-73. ADA-148 986.

Squire, V.A., Cowan, A.M. Ice edge, Ice mechanics, Ocean waves, Aerial surveys, Wave propagation, Photography, Drift, Spectra.

40-4697

Extreme ice edge ablation studies.

Joseberger, E.G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.74-75. ADA-148 986.

Ice edge, Ablation, Ice conditions, Freezing points.

40-4698

University of Washington heat and mass balance program.

Maykut, G.A., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.76-77. ADA-148 986.

Ice floes, Heat balance, Mass balance, Snow depth, Solar radiation, Ice mechanics, Drift.

40-4699

MIZEX-84 high frequency accelerometer study.

Becker, P.K., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.79-81. ADA-148 986.

Martin, S. Ice floes, Telemetering equipment, Antennas, Ships, Helicopters.

40-4700

Sea ice properties.

Tucker, W.B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MP 2136, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.82-83. ADA-148 986.

Gow, A.J., Weeks, W.F. Ice physics, Sea ice, Ice cores, Ice floes, Ice structure, Ice sampling, Ablation, Snow cover effect.

40-4701

Data report on variations observed in the composition of sea ice during MIZEX '84 with the NIMBUS-7 SMMR.

Gloersen, P., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.134-137. ADA-148 986.

Ice composition, Sea ice, Ice physics, Ice conditions.

40-4702

MIZEX 84: summary of acoustics program.

Baggeroer, A.B., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.140-143. ADA-148 986.

Dyer, I. Ice floes, Drift, Ice acoustics, Ice mechanics, Seismic reflection.

40-4703

Vertical array acoustics.

Dicus, R.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Oct. 1984, SR 84-29, MIZEX: a program for mesoscale air-ice-ocean interaction experiments in Arctic marginal ice zones. 5: MIZEX 84 summer experiment PI preliminary reports. Edited by O.M. Johannessen and D.A. Horn, p.148-151. ADA-148 986.

Underwater acoustics, Ice cover effect, Ice bottom surface, Surface roughness.

40-4704

Technology transfer opportunities for the construction engineering community: materials and diagnostics. *U.S. Army Cold Regions Research and Engineering Laboratory*, 1986, SR 86-01, 54p., ADA-166 360. Refs. passim. For selected papers see 40-4705 through 40-4708.

Detection, Construction materials, Roofs, Pavements, Maintenance, Protective coatings, Thermal conductivity, Concrete aggregates.

40-4705

In-situ thermoconductivity measurements.

Faucher, M., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, 1986, SR 86-01, MP 2137, Technology transfer opportunities for the construction engineering community: materials and diagnostics, p.13-14. ADA-166 360.

Thermal conductivity, Thermistors, Soil physics, Construction materials, Measuring instruments.

40-4706

Roof blister valve.

Korhonen, C., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, 1986, SR 86-01, MP 2138, Technology transfer opportunities for the construction engineering community: materials and diagnostics, p.29-31. ADA-166 360.

Roofs, Leakage, Damage, Countermeasures, Weathering.

40-4707

Airborne roof moisture surveys.

Tobiasson, W., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, 1986, SR 86-01, MP 2139, Technology transfer opportunities for the construction engineering community: materials and diagnostics, p.45-47. ADA-166 360.

Roofs, Moisture detection, Airborne equipment, Maintenance.

40-4708

Protected membrane roofing systems.

Tobiasson, W., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, 1986, SR 86-01, MP 2140, Technology transfer opportunities for the construction engineering community: materials and diagnostics, p.49-50. ADA-166 360.

Roofs, Insulation, Protection, Solar radiation, Drainage, Damage.

40-4709

Experimental determination of heat transfer coefficients in water flowing over a horizontal ice sheet.

Lunardini, V.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1986, CR 86-03, 81p., ADA-170 427, 32 refs.

Ziason, J.R., Yen, Y.-C. Heat transfer, Water temperature, Water flow, Ice cover effect, Ice melting, Ice surface, Tests, Velocity, Computer applications, Turbulent flow.

Experiments to study the melting of a horizontal ice sheet with a flow of water above it were conducted in a 35-m-long refrigerated flume, with a cross section of 1.2x1.2 m. Water depth, temperature, and velocity were varied as well as the temperature and initial surface profile of the ice sheet. The heat transfer regimes were found to consist of forced turbulent flow at high Reynolds numbers with a transition to free convection heat transfer. There was no convincing evidence of a forced laminar regime. The data were correlated for each of the regimes, with the Reynolds number, Re, or the Grashof number combined with the Reynolds number.

40-4710

Water—a comprehensive treatise. Volume 7: Water and aqueous solutions at subzero temperatures.

Franks, F., ed, New York, Plenum Press, 1982, 484p., 706 refs. For individual papers see 40-4711 through 40-4714.

Water temperature, Freezing, Supercooling, Solutions, Thermodynamics, Spectroscopy, Hydrogen bonds, Molecular structure.

40-4711

Supercooled water.

Angell, C.A., *Water—a comprehensive treatise. Volume 7: Water and aqueous solutions at subzero temperatures*. Edited by F. Franks, New York, Plenum Press, 1982, p.1-81.

Water temperature, Supercooling, Hydrogen bonds, Thermodynamics, Vitreous ice, Spectroscopy, Electrical resistivity, Temperature effects.

40-4712

Amorphous solid water and its relationship to liquid water: a random network model for water.

Sceats, M.G., et al, *Water—a comprehensive treatise. Volume 7: Water and aqueous solutions at subzero temperatures*. Edited by F. Franks, New York, Plenum Press, 1982, p.83-214.

Rice, S.A. Amorphous ice, Phase transformations, Ice formation, Molecular structure, Ice crystals, Temperature effects, Spectroscopy, Hydrogen bonds, Analysis (mathematics), Models.

40-4713

Properties of aqueous solutions at subzero temperatures.

Franks, F., *Water—a comprehensive treatise. Volume 7: Water and aqueous solutions at subzero temperatures*. Edited by F. Franks, New York, Plenum Press, 1982, p.215-338.

Solutions, Supercooling, Freeze thaw cycles, Ice crystal nuclei, Ice crystal growth, Thermodynamics, Analysis (mathematics).

40-4714

Dynamics of water in heterogeneous systems with emphasis on subzero temperatures.

Derbyshire, W., *Water—a comprehensive treatise. Volume 7: Water and aqueous solutions at subzero temperatures*. Edited by F. Franks, New York, Plenum Press, 1982, p.339-450.

Water flow, Water temperature, Supercooling, Solutions, Dynamic properties, Water chemistry, Spectroscopy, Molecular structure, Ions, Hydrogen bonds, Analysis (mathematics).

40-4715

Great Lakes degree-day and winter severity index update: 1897-1983.

Assel, R.A., *U.S. National Oceanic and Atmospheric Administration. NOAA data report*, May 1986, ERL GLERL-29, 54p., 9 refs.

Climatology, Freeze thaw cycles, Degree days, Ice growth, Seasonal variations, Ice deterioration, Statistical analysis, Great Lakes.

40-4716

Icing of ships. Part 1: Splashing a ship with spray.

Zakrzewski, W.P., *U.S. National Oceanic and Atmospheric Administration. NOAA technical memorandum*, Mar. 1986, ERL PMEL-66, 74p., 54 refs.

Ship icing, Sea spray, Ice growth, Ice accretion, Ocean waves, Wind velocity, Time factor, Analysis (mathematics).

40-4717

Design considerations for river training structures and Tanana River case study.

Miles, M.D., et al, *Alaska. Dept. of Transportation and Public Facilities. Report*, Dec. 1984, FHWA-AK-RD-85-30, 65p., Refs. p.63-65.

Carlson, R.F. River basins, Channels (waterways), River flow, Structures, Design, Sediment transport, Engineering, Computer applications, Models, Flood control, Shores, United States—Alaska—Tanana River.

40-4718

Revegetation of Alaskan disturbed sites by native tundra species.

Chapin, F.S., III, et al, *Alaska. University. Institute of Arctic Biology. Report*, July 6, 1986, 15p., Refs. p.11-15.

Linkins, A.E., Shaver, G.R. Tundra, Revegetation, Damage.

- 40-4719**  
Estimating snow load in California for three recurrence intervals.  
Azuma, D.L., *U.S. Pacific Southwest Forest and Range Experiment Station, Berkeley, California. U.S. Forest Service research note*, Dec. 1985, PSW-379, 6p., 12 refs.  
Snow loads, Snow water equivalent, Snow depth, Mountains, Statistical analysis, United States—California.
- 40-4720**  
Polar class antarctic 1984 level ice resistance tests.  
Glen, I., et al, *Transport Canada. Report*, Mar. 1985, 7183E, 110p., 6 refs. With French summary.  
Goossens, L., Voelker, R.P., Geisel, F.  
Design criteria, Ice loads, Impact tests, Ice pressure, Icebreakers, Sea ice, Antarctica—McMurdo Sound.  
Subsequent to icebreaking resistance tests in thin level ice (under 2 feet, 0.6 m) in the Bering Sea in 1982, a series of tests was performed in thick level ice (3-6 feet, 0.9-1.8 m) at a range of ship speeds and power levels in McMurdo Sound in January 1985. This data, along with previous resistance data from the Arctic, were used to develop a mathematical relationship describing POLAR class performance in a range of ice thicknesses. Concurrent with field tests, ice impact loads were measured on an instrumented bow panel. The collected impact data are reported in a companion report, "Polar Class Antarctic 1984—Ice Impact Tests" (TP 7184E). The results of the resistance tests were used to evaluate two semi-empirical ice resistance prediction models. The most recently developed and more advanced model gave good predictions for ice resistance, after the model was updated using the latest resistance data. (Auth.)
- 40-4721**  
Geomorphic evidence for the distribution of ground ice on Mars.  
Squyres, S.W., et al, *Science*, Jan. 1986, 231(4735), p.249-252, Refs. p.252.  
Carr, M.H.  
Ground ice, Extraterrestrial ice, Mars (planet).
- 40-4722**  
Formation of a string and pool topography as expressed by morphology, stratigraphy and current processes on a mire in Kuusamo, Finland.  
Seppälä, M., et al, *Boreas*, Dec. 1985, 14(4), p.287-309, Refs. p.307-309.  
Koutaniemi, L.  
Snow cover effect, Freeze thaw cycles, Frost penetration, Patterned ground.
- 40-4723**  
Studying sorption properties and unfrozen water content of phenol-based composite foam plastics. [Isledovanie sorbtsionnykh svoystv i kolichestva nezamershego vody kompozitsnykh penoplastov na fenol'noy osnove].  
Efimov, S.S., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1986, No.4, p.57-61, In Russian. 4 refs.  
Nikitina, L.M., Dalbaeva, E.K.  
Cellular plastics, Thermal insulation, Unfrozen water content, Tests, Polymers, Hygroscopic water, Laboratory techniques, Freeze thaw cycles.
- 40-4724**  
Calculating channel-bed deformations in non-rocky perennially frozen ground. [O raschetakh pereformirovaniia rusla kanala v mnogoletnemerzlykh neskal'nykh gruntakh].  
Krasavin, A.N., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1986, No.4, p.75-79, In Russian. 6 refs.  
Shore erosion, Channels (waterways), Permafrost structure, Ground ice, Ice melting, Stream flow, Analysis (mathematics).
- 40-4725**  
Quasi-stationary Stefan problem for an insulated pipeline in frozen ground. [Kvazistatsionarnaiia zadacha Stefana dlia izolirovannogo truboprovoda v merzлом grunte].  
Vakhromeev, I.U.M., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1986, No.4, p.81-85, In Russian. 5 refs.  
Kania, I.A.N.  
Stefan problem, Pipeline insulation, Permafrost beneath structures, Design, Heat transfer, Phase transformations.
- 40-4726**  
Regularities of ice thickness distribution in the Arctic Basin. [Nekotorye zakonomernosti raspredeleniia tolshchiny l'da v Arkticheskom basseine].  
Mironov, E.U., *Geograficheskoe obshchestvo SSSR. Izvestiia*, May-June 1986, 118(3), p.202-207, In Russian. 15 refs.  
Sea ice distribution, Ice cover thickness, Pressure ridges, Air water interactions, Polar regions, Heat transfer, Ice models, Mathematical models.
- 40-4727**  
Pedologic and geobotanical regionalization based on satellite photography. [Pochvenno-geobotanicheskoe raionirovanie na osnove kosmicheskikh snimkov].  
Gorozhankina, S.M., et al, *Geograficheskoe obshchestvo SSSR. Izvestiia*, May-June 1986, 118(3), p.247-255, In Russian. 10 refs.  
Konstantinov, V.D.  
Spaceborne photography, Mapping, Photointerpretation, Geobotanical interpretation.
- 40-4728**  
Solution of self-modeling problem of frost penetration into finely dispersed ground, allowing for moisture migration in frozen and thawed zones. [Avtomodel'noe reshenie zadachi promerzaniia tonkodispersnykh gruntov s uchetom migratsii vlagi v taloi i merzlof zonakh].  
Ivanitskii, P.A., *Akademii nauk SSSR. Izvestiia. Mekhanika zhidkosti i gaza*, Mar.-Apr. 1986, No.2, p.113-120, In Russian. 13 refs.  
Water films, Stefan problem, Phase transformations, Diffusion, Heat transfer, Mass transfer, Ground ice.
- 40-4729**  
Nonstationary nucleation in supercooled vapor: analytical description and numerical calculations. [Nestatsionarnoe iadrobrazovanie v pereokhlazhdennom pare: analiticheskoe opisaniie i chislennyye raschety].  
Shneidman, V.A., et al, *Akademii nauk SSSR. Izvestiia. Mekhanika zhidkosti i gaza*, Mar.-Apr. 1986, No.2, p.169-171, In Russian. 6 refs.  
Shubenko, A.L.  
Supercooled fog, Nucleation, Ice nuclei, Ice formation, Phase transformations, Analysis (mathematics).
- 40-4730**  
Ultrasonic technique of determining unfrozen water amounts in frozen peat. [Opredelenie kolichestva nezamershego vody v merzlof torfe s pomoshch'iu ultrazvuka].  
Gamaiunov, N.I., et al, *Torfiannaiia promyshlennost'*, Jan. 1986, No.1, p.25-27, In Russian. 5 refs.  
Ivanov, G.N., Stotland, D.M., Tovbin, I.B.  
Peat, Frost penetration, Unfrozen water content, Analysis (mathematics).
- 40-4731**  
Freeze-up and break-up of lakes as an index of temperature changes during the transition seasons: a case study for Finland.  
Palecki, M.A., et al, *Journal of climate and applied meteorology*, July 1986, 25(7), p.893-902, 26 refs.  
Barry, R.G.  
Lakes, Freezeup, Ice breakup, Air temperature, Climatic changes, Finland.
- 40-4732**  
Lake shoreline development, frost weathering and rock platform erosion in an alpine periglacial environment, Jotunheimen, southern Norway.  
Matthews, J.A., et al, *Boreas*, Mar. 1, 1986, 15(1), p.33-50, Refs. p.48-50.  
Dawson, A.G., Shakesby, R.A.  
Shoreline modification, Lake water, Frost weathering, Periglacial processes, Lake ice, Ice dams, Rock mechanics, Erosion, Freeze thaw cycles, Geomorphology, Paleoclimatology.
- 40-4733**  
Glacial tectonics and deposition of stratified drift during formation of tills beneath an active glacier—examples from Skåne, southern Sweden.  
Åmark, M., *Boreas*, June 1, 1986, 15(2), p.155-171, 53 refs.  
Glacial deposits, Tectonics, Sediments, Subglacial drainage, Glacier melting, Paleoclimatology, Sweden.
- 40-4734**  
Civilizing the Soviet frontier: first Siberian subway system comes in from the cold.  
D'Anastasio, M., *Engineering news-record*, Apr. 17, 1986, 216(16), p.48.  
Subsurface structures, Cold weather construction, Tunneling (excavation), Engineering.
- 40-4735**  
Mechanical stabilization for the control of frost heave.  
Kettle, R.J., et al, *Canadian journal of civil engineering*, Dec. 1985, 12(4), p.899-905, 18 refs., With French summary.  
McCabe, E.Y.  
Frost heave, Soil stabilization, Frost resistance, Soil pressure, Soil aggregates, Tests, Particle size distribution, Freezing.
- 40-4736**  
Seismic liquefaction probability for Canadian offshore regions.  
Atkinson, G.M., *Canadian journal of civil engineering*, Dec. 1985, 12(4), p.920-926, 18 refs., With French summary.  
Offshore structures, Soil strength, Ice loads, Engineering, Ocean bottom, Seismic surveys, Design, Environmental impact, Pack ice, Earthquakes, Beaufort Sea.
- 40-4737**  
Seepage flow through simulated grounded ice jam.  
Wong, J., et al, *Canadian journal of civil engineering*, Dec. 1985, 12(4), p.926-929, 2 refs., With French summary.  
Beltaos, S., Krishnappan, B.G.  
Ice jams, Grounded ice, Seepage, Unsteady flow, Tests, Water level, Water flow.
- 40-4738**  
Laboratory tests on surges created by ice jam releases.  
Wong, J., et al, *Canadian journal of civil engineering*, Dec. 1985, 12(4), p.930-933, 9 refs., With French summary.  
Beltaos, S., Krishnappan, B.G.  
Ice jams, Unsteady flow, Ice breakup, Ice mechanics, Models, Water level, Forecasting, Water flow, Velocity.
- 40-4739**  
Comparison of field data with theories on ice cover progression in large rivers. Discussion.  
Beltaos, S., et al, *Canadian journal of civil engineering*, Dec. 1985, 12(4), p.936-940, Includes reply by B. Michel. 10 refs. For article being commented on see 39-2493.  
Michel, B.  
River ice, Ice formation, Freezeup, Analysis (mathematics).
- 40-4740**  
Structure of water in solutions in the subcooled region from freezing-point depressions.  
Leyendekkers, J.V., *Chemical Society, London. Journal. Faraday transactions 1: Physical chemistry in condensed phases*, May 1986, 82(5), p.1663-1671, 23 refs.  
Solutions, Water structure, Freezing points, Water temperature, Hydrogen bonds, Temperature effects, Analysis (mathematics).
- 40-4741**  
Computer modelling of sea spray icing on marine structures.  
Horjen, I., et al, *Norwegian Hydrotechnical Laboratory. Bulletins*, 1985, No.25, p.29-37, 4 refs.  
Vefsnmo, S.  
Icing, Offshore structures, Sea spray, Ice control, Heating, Ice prevention, Ice temperature, Ice salinity, Porosity, Mathematical models.
- 40-4742**  
Impacts on safety and operation of marine units due to ice accretion.  
Jørgensen, T.S., *Norwegian Hydrotechnical Laboratory. Bulletins*, 1985, No.25, p.79-84, 4 refs.  
Ice accretion, Icing, Offshore structures, Sea spray, Ship icing, Safety, Stability, Water temperature, Air temperature, Snow accumulation, Supercooled fog, Wind velocity.
- 40-4743**  
Numerical sea spray icing model including the effect of a moving water film.  
Horjen, I., et al, *Norwegian Hydrotechnical Laboratory. Bulletins*, 1985, No.25, p.125-137, 11 refs.  
Vefsnmo, S.  
Icing, Offshore structures, Brines, Sea spray, Water films, Ice prevention, Ice cover thickness, Heat transfer, Analysis (mathematics), Velocity.
- 40-4744**  
Ice warning systems: communication or control.  
Harverson, D., *Highways*, Nov. 1985, 53(1907), p.8-9.  
Road icing, Ice control, Warning systems, Winter maintenance, Road maintenance, Human factors.

40-4745

Ice warning systems on British roads. Harverson, D., *Highways*, Apr. 1985, 53(1900), p.26-27.  
Road icing, Ice detection, Warning systems, Winter maintenance, Road maintenance, Human factors.

40-4746

Nivometric station in the Alps of Siusi. Snow pillow application. [La stazione nivometrica dell'Alpe di Siusi. Applicazione del "Cuscino neve"], Valentini, P., *Neve e valanghe*, Dec. 1985, No.2, p.7-13, 18 refs., In Italian.  
Snow accumulation, Meteorological data, Weather stations, Maintenance, Mountains, Italy—Alps.

40-4747

New types of foundation for snow fences. [Nuovi tipi di fondazione per i ponti da neve], Benussi, G., *Neve e valanghe*, Dec. 1985, No.2, p.36-41, In Italian.  
Snow fences, Foundations, Countermeasures, Avalanche formation, Snow accumulation.

40-4748

New anti-avalanche structures adopted in Friuli in the Carnic Alps. [Nuove strutture antivalanga adottate in Friuli sulle Alpi Carniche], De Cecco, M., *Neve e valanghe*, Dec. 1985, No.2, p.42-51, In Italian.  
Avalanche formation, Structures, Snow fences, Countermeasures.

40-4749

Active defense against avalanches. Snow fences—some thoughts about measures taken in the Aosta Valley. [Difesa attiva dalle valanghe. I ponti da neve, alcune riflessioni sugli interventi in Valle d'Aosta], Busanelli, G., *Neve e valanghe*, Dec. 1985, No.2, p.52-60, In Italian.  
Snow fences, Avalanche formation, Countermeasures.

40-4750

Numerical classification of forested soils in the high-mountain region of southwestern China. Duning, X., et al, *Soil science*, Feb. 1986, 141(2), p.127-137, 30 refs.  
Rust, R.H., Crum, J.R.  
Forest soils, Mountain soils, Soil classification, Soil profiles, Soil chemistry, Soil physics, Soil formation, Vegetation factors, Analysis (mathematics), China.

40-4751

Groundwater discharge from glacial and bedrock aquifers as a soil salinization factor in Saskatchewan. Henry, J.L., et al, *Canadian journal of soil science*, Nov. 1985, 65(4), p.749-768, 38 refs.  
Ground water, Glacial hydrology, Saline soils, Drainage, Soil chemistry, Stratigraphy, Canada—Saskatchewan.

40-4752

Review of the Sierra Cooperative Pilot Project. Reynolds, D.W., et al, *American Meteorological Society. Bulletin*, May 1986, 67(5), p.513-523, 25 refs.  
Dennis, A.S.  
Cloud seeding, Snowfall, Remote sensing, Models, Statistical analysis, Mountains, United States—California—Sierra Nevada.

40-4753

Tendons anchor Swiss restaurant into mountain. Pilarski, L., *Engineering news-record*, May 15, 1985, 216(20), p.55.  
Cold weather construction, Permafrost, Concrete structures, Buildings, Mountains, Engineering, Altitude, Climatic factors, Switzerland—Jungfrauoch.

40-4754

Variations in volume of the Careser glacier (Central Alps—Ortles-Cevedale Group) between 1967 and 1980. [Modificazioni volumetriche sul ghiacciaio del Careser (Alpi Centrali, Gruppo Ortles-Cevedale) tra il 1967 e il 1980], Giada, M., et al, *Comitato glaciologico italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1985, 8(1), p.10-13, In Italian with English summary. 7 refs.  
Zanon, G.  
Glacier mass balance, Glacier oscillation, Glaciology, Aerial surveys, Altitude, Ice volume, Italy—Careser.

40-4755

Recent development of the glacial lake near Quirles Glacier (Grandes Rousses Massif, Romanche, Isère). [Evolution récente d'un lac juxtaglaciaire: le lac des Quirles (Massif des Grandes Rousses, Romanche, Isère)], Edouard, J.L., *Revue de géographie alpine*, 1986, 74(1-2), p.93-98, In French with English summary. 8 refs.  
Glacial lakes, Glacier oscillation, Geomorphology, France—Quirles Glacier.

40-4756

CO<sub>2</sub> and climate: information from antarctic ice core studies. Raynaud, D., et al, Current issues in climate research. Symposium of the EC Climatology Programme, Sophia Antipolis, France, Oct. 2-5, 1984. Proceedings. Edited by A. Ghazi and R. Fantechi, Dordrecht, D. Reidel Publishing Company, 1986, p.240-247, 11 refs.  
Barnola, J.M.  
DLC QC889.A1E25  
Carbon dioxide, Ice cores, Ice composition, Paleoclimatology.

Ice cores provide the most direct tool for reconstructing the evolution of atmospheric CO<sub>2</sub> during the last 40,000 years. Results obtained in antarctic cores indicate that atmospheric CO<sub>2</sub> was increasing by a factor of about 1.3 at the end of the last Ice-Age. They suggest a close CO<sub>2</sub>-climate relation, with the CO<sub>2</sub> change starting almost simultaneously or even slightly before the temperature change at high latitudes. For the Recent period (the last 500 years) the antarctic ice cores suggest that the "pre-industrial" CO<sub>2</sub> level was not constant and was in the 260-280 ppmv range. If so, it was significantly lower than the 290 ppmv adopted previously in modelling the evolution of atmospheric CO<sub>2</sub> during the present period and the corresponding climatic response. (Auth.)

40-4757

Glacial architecture. [Ledianoe zodchestvo], Berdnikov, V., *Nauka i zhizn'*, May 1986, No.5, p.53-58, In Russian. 9 refs.  
Artificial ice, Ice (construction material), Ice crossings, Ice roads, Ice dams, Ice physics, Construction equipment, Ice mechanics, Ice thermal properties.

40-4758

Subglacial submarine: unexpected invention of 1985 in the field of transportation. [Podlednaia lodka. Neozhidannoe izobretenie 1985 goda v oblasti transporta], Volgin, A., *Nauka i zhizn'*, Apr. 1986, No.4, p.140-141, In Russian. Comment, p.148.  
Submarines, Subglacial navigation.

40-4759

Synchronous changes in activities of dangerous natural phenomena and their forecasting. [Sinkhronnye izmeneniia aktivnosti opasnykh yavlenii i ikh prognoz], Berri, B.L., et al, *Moscow. Universitet. Vestnik. Seria 5 Geografiia*, May-June 1986, No.3, p.23-30, In Russian. 21 refs.  
Miagkov, S.M., Freidlin, V.S.  
Long range forecasting, Avalanches, Streams, Mudflows, Slope processes, Analysis (mathematics).

40-4760

Granulometric composition of primitive cryogenic weathering crusts of solifluction deposits on Khibiny Mountains. [Granulometricheskii sostav primitivno-kriogennoi kory vyvetrivanii i solifluktsionnykh otlozhenii Khibiny], IUrov, I.U.L., *Moscow. Universitet. Vestnik. Seria 5 Geografiia*, May-June 1986, No.3, p.66-71, In Russian. 12 refs.  
Permafrost weathering, Solifluction, Sediments, Geocryology, Grain size, Lithology.

40-4761

Dynamics of tree-height variability in taiga spruce forests. [Dinamika izmenchivosti vysoty dere'vev taizhnykh el'nikov], Gusev, I.I., *Lesnoi zhurnal*, 1986, No.2, p.5-9, In Russian. 6 refs.  
Taiga, Trees (plants), Cryogenic soils, Classifications, Permafrost distribution, Permafrost depth, Plant ecology, Plant physiology.

40-4762

Dispersive influence of sodium nitrite solution on frozen and thawed soils. [Dispergirovushchee vliianie rastvorov natriia na merzlye i talye grunty], Miglachenko, V.P., *Lesnoi zhurnal*, 1986, No.2, p.41-43, In Russian.  
Roadbeds, Earthwork, Railroads, Artificial thawing, Brines, Antifreezes, Frost protection.

40-4763

Heat emission accompanying thawing of a vertical ice surface. Gogolev, E.S., *Journal of engineering physics*, Dec. 1985 (Pub. June 86), 49(6), p.1508-1511, Translated from *Inzhenerno-fizicheskii zhurnal*. 7 refs.  
Stream flow, Ice water interface, Heat transfer, Mathematical models.

40-4764

Investigation of low-stress ice rheology on the Ward-Hunt Ice Shelf. MacAyeal, D.R., et al, *Journal of geophysical research*, May 10, 1986, 91(B6), p.6347-6358, 45 refs.  
Holdsworth, G.  
Ice shelves, Ice creep, Rheology, Sea ice, Ice pressure, Ice salinity, Canada—Northwest Territories—Ward-Hunt Ice Shelf.

40-4765

Characteristics of surge-type glaciers. Clarke, G.K.C., et al, *Journal of geophysical research*, June 10, 1986, 91(B7), p.7165-7180, 42 refs.  
Schmok, J.P., Ommanney, C.S.L., Collins, S.G.  
Glacier surges, Glacial geology, Tectonics, Mountain glaciers, Glacier flow, Slope orientation.

40-4766

Wind and temperature regime along the slope of Adélie Land, Antarctica. Kodama, Y., et al, *Journal of geophysical research*, May 20, 1986, 91(D6), p.6735-6741, 26 refs.  
Wendler, G.  
Wind (meteorology), Temperature distribution, Topographic features, Weather stations, Antarctica—Adélie Coast.

An analysis was made of data collected from automatic weather stations (AWS) on the slope of Adélie Land. The data were collected simultaneously at different stations on the ice-covered slope of the continent, where no data have previously been obtained. The stations are classified into three groups according to their location (high plateau, intermediate plateau, or coastal region), each having distinct annual temperature and wind speed regimes. These classifications also correspond well to the stations' slopes. Change in surface air temperature along the slope with respect to height was smaller than -1C/100m between the high plateau and the intermediate plateau stations. The wind directions did not follow Ball's model, which suggests the importance of the gradient of surface potential air temperature along the slope on the wind regime. A scale analysis showed the condition in which the gradient of surface potential air temperature along the slope should not be considered negligible when considering the total pressure gradient force. This condition in turn indicates that the entrainment of momentum across the top of the katabatic wind layer is also important. (Auth.)

40-4767

Spin-down of baroclinic eddies under sea ice. Ou, H.W., et al, *Journal of geophysical research*, June 15, 1986, 91(C6), p.7623-7630, 12 refs.  
Gordon, A.L.  
Sea ice, Ocean currents, Density (mass/volume), Sea water, Antarctica—Weddell Sea.

A linear model is used to examine the spin-down of a baroclinic eddy under the sea ice. For anticyclonic eddies the ice stress, besides directly spinning down the azimuthal flow within the mixed layer, generates an Ekman divergence that raises the pycnocline near the eddy axis. For eddies of the size of the baroclinic radius of deformation the doming reaches a quasi-stationary state on the frictional time scale  $T$  which generally is of the order of days. The erosion of the dome, however, occurs over a much longer time scale. Using realistic parameter values for the polar eddies, this time scale is of the order of a year or longer. The pycnocline dome observed over the antarctic warm cells is thus likely to survive into the following freezing season and provide a preconditioning for the deep convection in the Weddell Sea. (Auth.)

40-4768

Diffusion of sea ice. Thorndike, A.S., *Journal of geophysical research*, June 15, 1986, 91(C6), p.7691-7696, 6 refs.  
Sea ice, Ice deformation, Drift, Ice models.

40-4769

Satellite microwave and *in situ* observations of the Weddell Sea ice cover and its marginal ice zone. Comiso, J.C., et al, *Journal of geophysical research*, Aug. 15, 1986, 91(C8), p.9663-9681, 22 refs.  
Sullivan, C.W.  
Sea ice, Ice edge, Microwaves, Spaceborne photography, Thermal radiation.

Time series studies from winter through spring, using every other day observations from the Nimbus 7 scanning multichannel microwave radiometer, reveal significant spatial variability of the brightness temperatures of consolidated ice in winter and a recurring temporal and often larger spatial variability in spring. The recurring effect in spring was strongly correlated with observed surface air temperatures and is apparently associated with the cyclic changes in wetness of the snow cover of the ice while experiencing the freeze-thaw cycle. To effectively discriminate ice from open water within the ice pack, a minimum of two channels at different frequencies, preferably 18 GHz and 37 GHz, is required. Ice concentrations derived

from the sensor are compared with helicopter and ship observations, and results show consistency but a relatively low correlation coefficient partly due to the quasi-qualitative nature of the in situ observations and uncertainties in ice emissivity in spring. The character and the northernmost extent of the ice margin are quantified using radial plots of ice concentration across the ice pack and into ice free ocean. Temporal changes in the ice margin structure are compared with ship data of physical temperature, ice characteristics, wind, and weather. Studies of the mass balance of fresh water and of biological features of the marginal ice zone are shown to benefit from time series information concerning the position of the ice edge as derived from satellite remote sensing. (Auth.)

40-4770

Seasonal prediction of iceberg severity in the Labrador Sea.

Walsh, J.E., et al. *Journal of geophysical research*, Aug. 15, 1986, 91(C8), p.9683-9692, 13 refs.

Wittmann, W.L., Hester, L.H., Dehn, W.S.

Icebergs, Ice forecasting.

40-4771

Vibration applied in the control of atmospheric icing on radio and television transmission towers.

Donaldson, R., Hanover, NH, Dartmouth College, Thayer School of Engineering, Oct. 1985, 77p., Bachelor of engineering project. 2 refs.

Icing, Towers, Ice removal, Vibration, Ice control, Protective coatings, Shear stress, Tests, Analysis (mathematics), Countermeasures.

40-4772

Development of a vibrational ice control system for transmission towers.

Dartmouth College. Thayer School of Engineering, Hanover, NH, July 1, 1986, 16p. + append., Progress report.

Donaldson, R.

Icing, Ice removal, Towers, Vibration, Countermeasures, Transmission lines, Monitors, Engineering, Foundations, Wind factors, Ice control.

40-4773

Frost heaving at test road Gälven—observations during winter 1983-84. (Tjälprovya Gälven—observationer vintern 1983-84).

Stenberg, L., Sweden. *Statens väg- och trafikinstitut. VTI meddelande*, 1985, No.453, 23p. + append., In Swedish with English summary. 7 refs.

Frost heave, Roadbeds, Frost resistance, Frozen ground expansion, Freezing indexes, Frost penetration, Latent heat, Heat transfer, Water level, Tests, Air temperature.

40-4774

Glacial forms and deposits of Ebba Glacier and its foreland (Petuniabukta region, Spitsbergen).

Klysz, P., *Polish polar research*, 1985, 6(3), p.283-299, 19 refs., With Russian and Polish summaries.

Glacial deposits, Geomorphology, Periglacial processes, Moraines, Particle size distribution, Norway—Spitsbergen.

40-4775

Radiation conditions in the Hornsund area (Spitsbergen).

Glowicki, B., *Polish polar research*, 1985, 6(3), p.301-318, 13 refs., With Russian and Polish summaries.

Tundra, Radiation balance, Solar radiation, Albedo, Meteorological data, Seasonal variations, Norway—Spitsbergen.

40-4776

Investigations of the extreme temperatures of the ground surface in the Gashamnöyra region (Spitsbergen).

Kamiski, A., *Polish polar research*, 1985, 6(3), p.319-329, 18 refs., With Russian and Polish summaries.

Soil temperature, Surface temperature, Climatic factors, Solar radiation, Air temperature, Soil structure, Seasonal variations, Norway—Spitsbergen.

40-4777

Heat exchange in the subsurface soil layer in the Hornsund area (Spitsbergen).

Glowicki, B., *Polish polar research*, 1985, 6(3), p.331-339, 8 refs., With Russian and Polish summaries.

Tundra, Permafrost heat transfer, Active layer, Subsurface observations, Heat flux, Soil structure, Norway—Spitsbergen.

40-4778

Vertical flux of heat and moisture in snow and ice.

Kuhn, M., Land surface processes in atmospheric general circulation models. Edited by P.S. Eagleson, Cambridge, University Press, 1982, p.227-240, Refs. p.238-240.

Albedo, Ice models, Snow surface, Surface energy, Ice surface, Vapor transfer.

Features of the vertical fluxes of heat and water vapor at the land surface that are particular to snow and ice are described, and formulations of these processes that can be used in models of the global atmospheric circulation with a gridpoint spacing of

several hundred km are proposed. The basic processes described include special conditions at snow and ice surfaces; the surface energy budget, which is of direct interest to the modeler; energy and vapor transfer within the snow; and density changes due to metamorphism and to compaction. Albedo values applicable to yearly totals of global radiation at 8 coastal and 5 inland stations in Antarctica are presented in a table.

40-4779

Data on snow cover and glaciers for the global climatic models.

Kotliakov, V.M., et al. Land surface processes in atmospheric general circulation models. Edited by P.S. Eagleson, Cambridge, University Press, 1982, p.449-461, Refs. p.458-461.

Krenke, A.N.

Climate, Ice volume, Snow depth, Ice cover effect.

Literature on the world extent of snow cover and glaciers, and effects on climate, is reviewed. Tables showing the area and mass of snow cover formed annually and dimensions of glaciation, for each hemisphere, are presented. Primary data their types, quality and recurrency, and how they are obtained and used, are described.

40-4780

Shortwave albedo and the surface emissivity.

Kondrat'ev, K.I.A., et al. Land surface processes in atmospheric general circulation models. Edited by P.S. Eagleson, Cambridge, University Press, 1982, p.463-514, 86 refs.

Korzov, V.I., Mukhenberg, V.V., Diachenko, L.N.

Albedo, Snow cover, Ice sheets.

Information available on snow cover and ice albedo for the polar regions is discussed. The percentage of antarctic ice albedo, and type of ice, concentration, and snow coverage, are shown in a table. It is suggested that data on surface albedo and emissivity compiled in this review paper illustrates inadequateness of the information available. Some recommendations include broadening of the network for year-round, ground-based observations, wider use of aircraft, improvement of satellite data retrieval techniques, and improvement of measurement techniques of emissivities of typical surfaces.

40-4781

Debris from the basal ice of the Agassiz ice cap, Ellesmere Island, Arctic Canada.

Gemmell, A.M.D., et al. *Earth surface processes and landforms*, Mar.-Apr. 1986, 11(2), p.123-130, 16 refs.

Sharp, M.J., Sugden, D.E.

Glacial deposits, Glacier beds, Sediments, Ice drills, Boreholes, Isotope analysis, Electron microscopy, Talus, Canada—Northwest Territories—Ellesmere Island.

40-4782

Rock moisture content in the field and the laboratory and its relationship to mechanical weathering studies.

Hall, K., *Earth surface processes and landforms*, Mar.-Apr. 1986, 11(2), p.131-142, 28 refs.

Rock mechanics, Frost weathering, Freeze thaw cycles, Patterned ground, Water content, Porosity, Antarctica—Signy Island.

Rock moisture content is a major control of mechanical weathering, particularly freeze-thaw, and yet almost no data exist from field situations. This study presents moisture content values for rocks, taken from a variety of positions and conditions, in the maritime Antarctic. Additional information regarding the amount of water the rock could take up, as observed from laboratory experiments, is also presented. The results show that the approaches used in simulation experiments, particularly that of soaking a rock for 24 hours, may produce exaggerated results. It was found that the saturation coefficient (S-value) was a good indicator of frost susceptibility (based on water content) but that the derivation of that value may underestimate the potential of some rocks. The distribution of moisture within rocks is seen as an important, but unknown, factor. These field moisture contents suggest that if simulations of freeze-thaw or hydration are to be meaningful, they should include rock water contents based on field observations. (Auth.)

40-4783

Winter water availability and use conflicts as related to fish and wildlife in Arctic Alaska—a synthesis of information.

Wilson, W.J., et al. *U.S. Fish and Wildlife Service. Office of Biological Services*, Mar. 1977,

FWS-OBS-77/06, 222p. + append., Refs. p.181-184.

Buck, E.H., Player, G.F., Dreyer, L.D.

AEIDC No. TC424 A4 A415

Water reserves, Ice cover effect, River flow, Marine biology, Lake water, Sea water, United States—Alaska.

40-4784

Role of herbivores in mineral cycling.

Batzli, G.O., Symposium on Environmental Chemistry and Cycling Processes, Augusta, Georgia, Apr. 28-May 1, 1976. Proceedings. Edited by D.C. Adriano and I.L. Brisbin, Jr., U.S. Dept. of Energy, Technical Information Center, 1978, p.95-112, CONF-760429, Refs. p.108-112.

Tundra, Nutrient cycle, Ecosystems, Soil pollution, Animals, Biomass, Vegetation, Soil composition.

40-4785

Internal nutrient cycling as related to plant life-form: a simulation approach.

Stoner, W.A., et al. Symposium on Environmental Chemistry and Cycling Processes, Augusta, Georgia, Apr. 28-May 1, 1976. Proceedings. Edited by D.C. Adriano and I.L. Brisbin, Jr., U.S. Dept. of Energy, Technical Information Center, 1978, p.165-181, CONF-760429, Refs. p.180-181.

Miller, P.C., Richards, S.P., Barkley, S.A.

Tundra, Nutrient cycle, Vegetation, Soil chemistry, Biomass, Mathematical models, Plant physiology.

40-4786

Environmental protection at transport-related construction sites. (Okhrana prirodnoi sredy na transportnom stroitel'stve).

Gamaunov, E.I., *Obzornaya informatsiya. Seriya: Okhrana truda, tekhnika bezopasnosti i okhrana okruzhayushchey sredy*, 1984, Vol.1, 43p., In Russian

with English table of contents enclosed. 35 refs.

Environmental protection, Permafrost beneath structures, Railroads, Roads, Hydraulic structures, Pipelines, Tunnels.

40-4787

Study of extended surface heat exchanger with frosting (1st report, overall heat transfer characteristics).

Aoki, K., et al. *Japan Society of Mechanical Engineers. Bulletin*, May 1986, 29(251), p.1499-1505, 9 refs.

Hattori, M., Itoh, T.

Heat transfer, Frost.

40-4788

Snow line calculation and typological classification of glaciers in specific topographic conditions. (Schnee-grenzberechnung und typologische Klassifikation von Gletschern anhand spezifischer Reliefparameter).

Kuhle, M., *Petermanns geographische Mitteilungen*, 1986, 130(1), p.41-51, In German. 34 refs.

Mountain glaciers, Glaciers, Classifications, Snow line, Variations.